JC10 Rec'd PCT/PTO 02 JAN 2002

		OZ JAN ZUUZ					
Form PTO-1390 US DEPARTMENT ( (Rev. 12-29-99) TRANSMITTAL LETTER TO T	OF COMMERCE PATENT AND TRADEMARK OFFICE THE UNITED STATES	ATTORNEY'S DOCKET NO. H 4086 PCT/US					
DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		u.s. application no. (if kill wrong 34 one 13 0 2 6 8					
INTERNATIONAL APPLICATION NO. PCT/EP00/05813  INTERNATIONAL FILING DATE June 23, 2000		PRIORITY DATE CLAIMED  July 2, 1999					
TITLE OF INVENTION COMPOSITE MATERIALS COMPRISED OF CALCIUM COMPOUNDS AND PROTEIN CONSTITUENTS							
APPLICANT(S) FOR DO/EO/US Christian KROPF, Marcel ROTH, Ulrike BRUENINGHAUS, Stefan MUELLNER, Albrecht WEISS, Ulrich SCHOERKEN, Lothar KINTRUP, Burkhard ESCHEN, Amerigo PASTURA, Peter WUELKNITZ, Ruediger KNIEP, Hans LASKA, Michael MEINDERS and Hans DOLHAINE							
Applicant herewith submits to the United St	ates Designated/Elected Office (EO/DO/US) to	he following items and other information:					
. This is a FIRST submission of ite	ems concerning a filing under 35 U.S.C. 371.						
2. I This is a SECOND or SUBSEQU	☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.						
examination until the expiration of	This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).						
A proper Demand for International  A copy of the International Applica	al Preliminary Examination was made by the 19	9th month from the earliest claimed priority date.					
A copy of the International Application as filed (35 U.S.C. 371(c)(2)).  a. □ is transmitted herewith (required only if not transmitted by the International Bureau).  b. ■ has been transmitted by the International Bureau.  c. □ is not required, as the application was filed in the United States Receiving Office (RO/US).							
6. A translation of the International Application into English (35.11.5.C. 371/5)(2)\							
Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))  a.							
8.   A translation of the amendments to t	the claims under PCT Article 19 (35 U.S.C. 3	71(c)(3)).					
9. ■ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).							
10. ■ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).							
Items 11. to 16. below concern other document(s) or information included:  11.  An Information Disclosure Statement under 37 CFR 1.97 and 1.98.							
12. ■ An assignment document for recording	ing. A separate cover sheet in compliance with	n 37 CFR 3.28 and 3.31 is included.					
13. ■ A FIRST preliminary amendment  □ A SECOND or SUBSEQUENT preli	3. A FIRST preliminary amendment  A SECOND or SUBSEQUENT preliminary amendment.						
14. ☐ A substitute specification.	4.   A substitute specification.						
15. □ A change of power of attorney and/or address letter.							
16. ■ Other items or information:							
Drawings - 2 sheets							
"Express Mail" mailing label numberEL 615775065 US							

U.S. Application Ne. (If known	\$\frac{37.cfr 1.5}{30268}	INTERNATIONAL APPLICATION NO. PCT/EP00/05813		ATTORNEY'S DOCKET NUMBER H 4086 PCT/US			
17. The following fees are submitted:  BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):  Neither international preliminary examination fee (37 CFR 1.482)  nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO  and International Search Report not prepared by the EPO or JPO					S PTO USE ONLY		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO\$890.00							
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37CFR 1.445(a)(2)) paid to USPTO							
International preliminar but all claims did not sa	y examination fee paid to tisfy provisions of PCT A						
International preliminary examination fee paid to USPTO (37CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)							
ENTER APPI	ROPRIATE BASI	C FEE AMOUNT	=	\$ 8	90		
Surcharge of \$130.00 for furnmenths from the earliest claim	ed priority date 37 (CFR	ration later than □ 20 1.492(e)).	□ 30	\$ 0			
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE				
Total Claims	15 - 20 =	0	0 X \$18.00	\$ 0			
Independent Claims	2 - 3 =	0	0 X \$84.00	\$ 0			
Multiple dependent claims (s)(		0	+ \$280.00	\$ 0			
TOTAL OF ABOVE CALCULATIONS =					90		
Reduction of ½ for filing by small entity, if applicable. A Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).							
SUBTOTAL =				\$ 89	90		
Processing fee of \$130.00 for furnishing the English translation later the 20 30 months from the earliest claimed priority date (37 CFR 1.492(f)).							
TOTAL NATIONAL FEE =					90		
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +							
		L FEES ENCLOS		\$ 89	00		
					\$		
	····			charged:	\$ 890.00		
<ul> <li>a. □ A check in the amount of \$ to cover the above fees is enclosed.</li> <li>b. ■ Please charge my Deposit Account No. <u>01-1250</u> in the amount of \$ 890.00 to cover the above fees.         A triplicate copy of this sheet is enclosed. Order No. <u>02-0002</u>.</li> <li>c. ■ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>01-1250</u>. A duplicate copy of this sheet is enclosed.</li> <li>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b))</li> </ul>							
SEND ALL CORRESPONDENCE TO: Henkel Corporation, Law Dept. 2500 Renaissance Blvd., Suite 200 Gulph Mills, PA 19406  Glenn E. J. Murphy NAME ATTORNEY FOR APPLICANT 33,539							
				TRATION NI	IMBER		

Express Mail Label No. EL 615775065 US

PATENT

Docket H 4086 PCT/US

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: PCT/EP00/05813

International Filing Date:

June 23, 2000

Priority Date:

July 2, 1999

Applicant:

KROPF, et al.

Title:

COMPOSITE MATERIALS COMPRISED OF CALCIUM COMPOUNDS AND PROTEIN

CONSTITUENTS

### PRELIMINARY AMENDMENT

Assistant Commissioner of Patents Washington, DC 20231

Please enter the amendments below before examining this case on the merits:

### IN THE SPECIFICATION:

On page 1, insert below the title:

### -- CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a U.S. National Stage application filed under 35 U.S.C. § 371 of International Application No. PCT/EP00/05813. This application claims priority of PCT/EP00/05813, filed in the European Patent Office June 23, 2000, under 35 U.S.C. § 119 and of DE 199 30 335.5, filed in the German Patent Office on July 2, 1999, under 35 U.S.C. § 365.—

On page 3, insert between lines 28 and 29:

### --BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a TEM micrograph of a composite according to the invention comprising hydroxylapatite and Type A gelatine.

Figure 2 is a TEM micrograph of the composite of hydroxylapatite and Type A gelatine after the hydroxylapatite has been dissolved out with ethylenediamine tetraacetate.

DESCRIPTION OF THE INVENTION --.

## ABSTRACT:

Please add the attached abstract to the application as a separate page following the claims.

### IN THE CLAIMS:

Please cancel claims 1-15, and add new claims 16-30:

### 16. A composite material comprising:

a) one or more poorly water-soluble phosphate, fluoride, or fluorophosphate salts of calcium, which salts may also contain hydroxyl and/or carbonate groups, the calcium salt or salts being in the form of rodlet-like primary particles having a mean particle diameter of 10 to 300 nm; and

- b) one or more proteins, protein hydrolyzates, or protein hydrolyzate derivatives.
- 17. The composite material of claim 1, wherein the rodletlike primary particles have a thickness of 2 to 50 nm and a length of 10 to 150 nm.
- 18. The composite material of 16, wherein b) comprises one or more substances selected from the group consisting of collagen, gelatine, keratin, casein, wheat protein, rice protein, soya protein, almond protein, and hydrolyzates and hydrolyzate derivatives thereof.
- 19. The composite material of claim 16, wherein b) comprises one or more substances selected from the group consisting of gelatine, casein, and their hydrolyzates.
- 20. The composite material of claim 16, wherein the calcium salts are encapsulated with one or more surface modifiers.
- 21. The composite material of claim 16, wherein the calcium salts comprise one or more hydroxylapatite or fluorapatite salts.
- 22. The composite material of claim 16, wherein b) comprises 0.1% to 60% by weight of the composite material.
- 23. A process for production of a composite material, comprising the steps of forming an aqueous solution of one or more water-soluble calcium salts, forming an aqueous solution of one or more water-soluble phosphate and/or fluoride salts, and reacting the calcium salt solution with

the phosphate and or fluoride salt solution in the presence of one or more proteins, protein hydrolyzates, or protein hydrolyzate derivatives, whereby one or more poorly water-soluble phosphate, fluoride, or fluorophosphate salts of calcium, which salts may also contain hydroxyl and/or carbonate groups, precipitate in the form of rodlet-like primary particles having a mean particle diameter of 10 to 300 nm to form a composite material with the one or more proteins, protein hydrolyzates, or protein hydrolyzate derivatives.

- 24. The process of claim 23, wherein an acidic solution of a water-soluble calcium salt and a stoichiometric quantity of a water-soluble phosphate and/or fluoride salt with a pH below 3 are combined and the pH is raised with aqueous alkali or ammonia in the presence of the proteins, protein hydrolyzates, or protein hydrolyzate derivatives.
- 25. A method of tooth cleaning or dental care comprising the steps of applying to a tooth in need of said cleaning or care an amount of the composite material of claim 16 effective to remineralize the tooth.
- 26. A method of treating tooth or bone defects, comprising the steps of applying to a tooth or bone in need of said treatment an amount of the composite material of claim 16 effective to induce or promote biomineralization of the tooth or bone.
- 27. A method of implanting a tooth or bone implant comprising the steps of coating a tooth or bone implant with an amount of the composite material of claim 16 effective to

promote or induce bonding of the implant to a tooth or bone substrate.

- 28. A toothpaste comprising the composite material of claim 16.
- 29. A method of forming new bone tissue comprising the steps of applying to a bone tissue in need of new bone tissue formation an amount of the composite material of claim 16 effective to induce or promote formation of new bone tissue.
- 30. The composite material of claim 22, wherein b) comprises 0.5% to 10% by weight of the composite material.

## REMARKS

The specification has been amended to include a crossreference to related applications and headings appropriate to U.S. practice. No new matter has been added.

The new claims better claim the full literal and equivalent scope and breadth of subject matter disclosed in the application, notwithstanding applicants' belief that the original claims, drafted for examination in the German and European Patent Offices, would have been allowable but for minor matters of form permitted in German or European practice but objected to in the U.S.P.T.O. The new claims find support in the application independent of the original claims at page 3, line 29 to page 4, line 29, page 6, line 20 to page 7, line 14, page 9, lines 9-11, page 13, line 18 to page 15, line 1, and page 15, line 25 to page 17, line

23. Therefore the addition of new claims 16-30 is not believed to constitute a narrowing amendment within the holding of Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., No. 95-1066 (Fed. Cir. Nov. 29, 2000).

Applicants respectfully request entry of this Amendment and examination of the application. If any fees are due to enter this paper that have not been accounted for, please charge Deposit Account No. 01-1250.

Respectfully submitted,

Glenn E.J. Murph Reg. No. 33,539

Attorney Applican

(610) 278-4926

Henkel Corporation Patent Department 2500 Renaissance Blvd., Suite 200 Gulph Mills, PA 19406

### ABSTRACT

Composite materials comprising calcium salts, such as calcium phosphates and calcium fluorophosphates, which are poorly soluble in water, in the form of nanoparticules having an average particle diameter ranging from 10 to 300 nm. The composite materials also comprise protein constituents selected from proteins, protein hydrolyzates, and protein hydrolyzate derivatives. The materials are suited for use as remineralizing constituents in compositions for cleaning and caring for teeth as well as for promoting the regeneration of bone tissue.

2/pots

WO 01/01930

1

PCT/EP00/05813

# Composite Materials Comprised of Calcium Compounds and Protein Components

This invention relates to composite materials of nanoparticulate, poorly water-soluble calcium salts and protein components of which the composition and fine structure makes them particularly suitable for promoting the restoration of bones and dental enamel.

Phosphate salts of calcium have long been added to the formulations of tooth cleaning and dental care preparations both as abrasive components and for promoting the remineralization of dental enamel. This applies in particular to hydroxylapatite and fluorapatite and to amorphous calcium phosphates and to brushite (dicalcium phosphate dihydrate). Calcium fluoride has also been repeatedly described as a constituent of tooth cleaning preparations and as a component for strengthening dental enamel and for the prophylaxis of caries.

The availability of calcium compounds for the desired remineralization is critically determined by the particle size of these poorly water-soluble components which are dispersed in the dental care preparations. Accordingly, it has been proposed to use these poorly soluble calcium salts in the form of very fine particles.

Dental enamel and the supporting tissue of bones consist predominantly of the mineral hydroxylapatite. In the biological formation process, hydroxylapatite attaches itself in an ordered manner to the protein matrix in the bone or tooth which consists predominantly of collagen. The development of the hard and very strong mineral structures is controlled by the so-called matrix proteins which are formed by other proteins besides collagen. These other proteins attach themselves to the collagen and thus effect a structured mineralization process which is also known as biomineralization.

5

10

15

20

25

10

15

20

25

30

WO 01/01930 2 PCT/EP00/05813

In the restoration of bone material, an important part is played by so-called bone substitutes which promote the natural biomineralization process. These substitutes are also required for coating implants to establish firm bonds between bone and implant which are even capable of transmitting tensile forces. Of particular significance in this regard are coatings with high bioactivity which lead to an effective compound osteogenesis. According to the prior art as described, for example, by G. Willmann in Mat.-wiss. u. Werkstofftech. 30 (1999), 317, hydroxylapatite is generally applied to implants. The disadvantage of this approach besides the often inadequate acceleration of the biomineralization process lies in the flaking of the hydroxylapatite layers and their unsatisfactory chemical stability.

There are certain applications which require bone substitute materials that are capable of being injected as liquids. A particularly small particle size is required for such applications but, unfortunately, cannot be satisfactorily achieved with conventional bone substitutes.

Among known bone substitutes, composites of hydroxylapatite and collagen are of particular interest because they imitate the composition of natural bone material. A similar situation prevails in the restoration of tooth material of which about 95% consists of hydroxylapatite.

Composite materials of the described type can be obtained by synthetic methods as described, for example, by B. Flautre et al. in J. Mater. Sci.: Mater. in Medicine 7 (1996), 63. However, the particle size of the calcium salts in these composites is above 1,000 nm which is too large for a satisfactory biological effect as remineralizing agents.

By contrast, R.Z. Wang et al., **J. Mater. Sci. Lett. 14 (1995), 490**, describe a process for the production of a composite material of hydroxylapatite and collagen in which hydroxylapatite with a particle size of 2 to 10 nm is deposited in uniformly distributed form onto the collagen matrix. The composite material is said to have better biological activity

10

15

20

than other hydroxylapatite/collagen composites known from the prior art by virtue of the particle fineness of the hydroxylapatite. As described in the following, the composite material described by R.Z. Wang et al. also fails to adequately meet the need for composite materials which imitate the composition and microstructure of natural bone and tooth material and which are suitable in every respect for remineralizing these natural materials.

Protein-containing composite materials known from the prior art contain proteins of animal origin, more particularly proteins obtained from bovine material. However, for some years now, there has been an increasing demand, particularly in the cosmetics field, for products which are entirely free from ingredients of animal origin. Accordingly, there is also a need for composite materials which do not contain any protein components of animal origin.

Another disadvantage of protein-containing composite materials known from the prior art lies in their often complicated production. For example, in the production of the hydroxylapatite/collagen composite described by R.Z. Wang et al., insoluble collagen has to be handled and dispersed in very large quantities of solvent which, on a large scale, is very difficult. This process creates additional problems in regard to the disposal of the wastewaters accumulating during the production process.

In addition, the protein-containing composite materials known from the prior art show unfavorable dispersibility through the presence of insoluble and/or high molecular weight protein components and are difficult to incorporate in the formulations required for their commercial application or show unsatisfactory dispersion stability in the preparations used.

It has now been found that certain composite materials are suitable for overcoming the above-described disadvantages of the prior art.

The present invention relates to composite materials comprising

25

10

15

20

25

- a) poorly water-soluble calcium salts selected from phosphates, fluorides and fluorophosphates which - if desired - may additionally contain hydroxyl and/or carbonate groups, the calcium salts being present in the form of nanoscale primary particles with a mean particle diameter of 10 to 300 nm, and
- b) protein components selected from proteins, protein hydrolyzates and protein hydrolyzate derivatives.

Composite materials in the context of the invention are understood to be composite materials which comprise the components mentioned in a) and b) and represent microscopically heterogeneous, but macroscopically homogeneous-looking aggregates and in which the primary particles of the calcium salts are associated onto the skeleton of the protein component. The percentage content of the protein components in the composite materials is between 0.1 and 60% by weight and preferably between 0.5 and 10% by weight, based on the total weight of the composite materials.

Primary particles are understood to be the crystallites, i.e. the monocrystals of the calcium salts mentioned. The particle diameter is understood here to be the diameter of the particles in the direction of their greatest length while the mean particle diameter is understood to be a value averaged over the total quantity of the composite. The particle diameter may be determined by any method known to the expert, for example by the method of transmission electron microscopy (TEM).

The mean particle diameter of the nanoscale primary particles is in the range from 10 to 150 nm. In a particularly preferred embodiment, the primary particles are present in the form of rodlet-like particles with a thickness of 2 to 50 nm and a length of 10 to 150 nm. Thickness is understood here to be the smallest diameter of the rodlets and length their largest diameter.

The three-dimensional structure of the composite materials

10

15

20

25

30

WO 01/01930 5 PCT/EP00/05813

according to the invention of a protein component and the poorly soluble nanoparticulate calcium salts is illustrated by way of example by the TEM micrograph in Fig. 1 of a composite material of hydroxylapatite and type A gelatine (magnification 200,000 x; 1 cm in Fig. 1 corresponds to 40 nm). The rodlet-like nanoparticles of hydroxylapatite are superimposed on the high molecular weight protein component, which assumes a threedimensional structure essentially determined by its amino acid sequence. In other words, the nanoparticles so to speak reproduce the threedimensional structure of the protein component. This is illustrated in Fig. 2. which is a TEM micrograph of the type A gelatine skeleton of the same composite material after the hydroxylapatite has been dissolved out with a solution of ethylenediamine tetraacetate (magnification 56,000 x; 1.1 cm in Fig. 2 corresponds to 200 nm). The way in which the inorganic particles are attached to the basic skeleton of the protein component is determined by the primary structure (amino acid sequence) and - depending on the nature of the protein component - by its secondary, tertiary and quaternary structure. It has surprisingly been found that the spatial distribution and the quantitative extent of the attachment of the inorganic nanoparticles to the protein component can be influenced by the type and quantity of the amino acids present in the protein component and hence by the choice of the protein components. Thus, a particularly high degree of charging with the poorly soluble calcium salt can be achieved, for example, through the choice of protein components which are rich in the amino acids aspartic acid, glutamic acid or cysteine. In addition, depending on the spatial distribution of these amino acids in the protein skeleton, the charging of the protein component with the poorly soluble calcium salt can be spatially structured in a certain way.

Accordingly, the composite materials according to the invention are structured composite materials in contrast to the hydroxylapatite/collagen composite described by R.Z. Wang et al. in which uniformly distributed

10

15

20

25

30

hydroxylapatite nanoparticles are present. Another crucial difference between the subject of the present invention and the prior art lies in the size and morphology of the inorganic component. The hydroxylapatite particles present in the hydroxylapatite/collagen composite described by R.Z. Wang et al. have a size of 2 to 10 nm. Hydroxylapatite particles in this size range can be assigned to the range of amorphous or partly X-ray-amorphous materials.

Surprisingly, it was possible through the present invention to produce composite materials containing crystalline inorganic nanoparticles in which the nanoparticles have a microscopically clearly discernible crystalline morphology. Figure 1 shows the rodlet-like structure of the inorganic nanoparticles. It has also been found that the structured composite materials according to the invention, in contrast to the prior art, lead to a particularly effective biomineralization process. It is assumed that this is associated with the microstructure of the composite material and, more particularly, with the size and morphology of the calcium salt crystals. Thus, it is assumed that the longitudinal axis of the calcium salt nanoparticles represents a preferential direction for further crystal growth during the biomineralization process.

Poorly water-soluble salts are salts of which less than 1 g/l dissolves at 20°C. Preferred calcium salts are calcium hydroxyphosphate  $(Ca_5[OH(PO_4)_3])$  or hydroxylapatite, calcium fluorophosphates  $(Ca_5[F(PO_4)_3])$  or fluorapatite, fluorine-doped hydroxylapatite with the general composition  $Ca_5(PO_4)_3(OH,F)$  and calcium fluoride  $(CaF_2)$  or fluorite (fluorspar).

One or more salts in admixture selected from the group of phosphates, fluorides and fluorophosphates, which if desired may additionally contain hydroxyl and/or carbonate groups, may be present as calcium salt in the composite materials according to the invention.

Basically, any proteins may be used as proteins in accordance with

10

15

20

25

30

T

WO 01/01930

understood to be degradation products of proteins such as, for example, collagen, elastin, casein, keratin, almond, potato, wheat, rice and soya protein which are obtained by acidic, alkaline and/or enzymatic hydrolysis of the proteins themselves or their degradation products, such as gelatine for example. Any hydrolytically acting enzymes, such as alkaline proteases for example, may be used for the enzymatic degradation. Other suitable enzymes and enzymatic hydrolysis processes are described, for example, in K. Drauz and H. Waldmann, Enzyme Catalysis in Organic Synthesis. VCH Verlag, Weinheim 1975. During their degradation, the proteins are split into relatively small subunits, the degradation process proceeding via the stages of the polypeptides through the oligopeptides up to the individual amino acids. In the context of the present invention, lowdegradation protein hydrolyzates include, for example, the gelatine preferred for the purposes of the invention which may have molecular weights in the range from 15,000 to 250,000 D. Gelatine is a polypeptide which is mainly obtained by hydrolysis of collagen under acidic conditions (type A gelatine) or alkaline conditions (type B gelatine). The gel strength of the gelatine is proportional to its molecular weight, i.e. a gelatine hydrolyzed to a relatively high degree gives a solution of relatively low viscosity. The gel strength of the gelatine is expressed in Bloom values. In the enzymatic hydrolysis of the gelatine, the polymer size is greatly

10

15

20

25

30

 reduced which leads to very low Bloom values.

According to the invention, other preferred protein hydrolyzates are the protein hydrolyzates used in the cosmetics field with an average molecular weight of 600 to 4,000 and preferably 2,000 to 3,500. Overviews of the production and use of protein hydrolyzates have been published, for example, by G. Schuster and A. Domsch in Seifen, Öle, Fette, Wachse, 108, (1982) 177 and Cosm. Toil. 99, (1984) 63, by H.W. Steisslinger in Parf. Kosm. 72, (1991) 556 and by F. Aurich et al. in Tens. Surf. Det. 29, (1992) 389. According to the invention, protein hydrolyzates of collagen, keratin, casein and vegetable proteins, for example those based on wheat gluten or rice protein, of which the production is described in German patents DE 19502167 C1 and DE 19502168 C1 (Henkel), are preferably used.

Protein hydrolyzate derivatives in the context of the present invention are understood to be chemically and/or chemoenzymatically modified protein hydrolyzates such as, for example, the compounds known by the INCI names of Sodium Cocoyl Hydrolyzed Wheat Protein, Laurdimonium Hydroxypropyl Hydrolyzed Wheat Protein, Potassium Cocoyl Hydrolyzed Collagen, Potassium Undecylenoyl Hydrolyzed Collagen and Laurdimonium Hydroxypropyl Hydrolyzed Collagen. According to the invention, derivatives of protein hydrolyzates of collagen, keratin and casein and vegetable protein hydrolyzates such as, for example, Sodium Cocoyl Hydrolyzed Wheat Protein or Laurdimonium Hydroxypropyl Hydrolyzed Wheat Protein are preferred.

Other examples of protein hydrolyzates and protein hydrolyzate derivatives which fall within the scope of the present invention are described in CTFA 1997 International Buyers' Guide, John. A. Wenninger et al. (Ed.), The Cosmetic, Toiletry and Fragrance Association, Washington DC 1997, 686-688.

In each of the composite materials according to the invention, the

10

15

20

25

30

WO 01/01930 9 PCT/EP00/05813

protein component may be formed by one or more substances selected from the group of proteins, protein hydrolyzates and protein hydrolyzate derivatives.

Preferred protein components are any structure-forming proteins, protein hydrolyzates and protein hydrolyzate derivatives by which are meant protein components which, through their chemical constitution, form certain three-dimensional structures that are known to the expert from protein chemistry as secondary, tertiary or even quaternary structures.

In another embodiment of the present invention, the nanoscale calcium salt primary particles present in the composite materials may be encapsulated in one or more surface modifiers.

In this way, it is possible, for example, to facilitate the production of composite materials in cases where the nanoparticulate calcium salts are difficult to disperse. The surface modifier is adsorbed onto the surface of the nanoparticles and modifies them to the extent that the dispersibility of the calcium salt increases and the nanoparticles are prevented from agglomerating.

In addition, the structure of the composite materials and the charging of the protein component with the nanoparticulate calcium salt can be influenced by surface modification. In this way, it is possible where the composite materials are used in remineralization processes to influence both the course and the speed of the remineralization process.

Surface modifiers in the context of the present invention are understood to be substances which physically adhere to the surface of the fine particles but do not react chemically with them. The individual molecules of the surface modifiers adsorbed to the surface are substantially free from intermolecular bonds between one another. Surface modifiers are understood in particular to be dispersants. Dispersants are also known to the expert by such names as, for example, emulsifiers, protective colloids, wetting agents, detergents, etc.

Suitable surface modifiers are, for example, emulsifiers of the nonionic surfactant type from at least one of the following groups:

- products of the addition of 2 to 30 moles ethylene oxide and/or 0 to
   5 moles propylene oxide onto linear fatty alcohols containing 8 to 22 carbon atoms, onto fatty acids containing 12 to 22 carbon atoms and onto alkylphenols containing 8 to 15 carbon atoms in the alkyl group;
  - C<sub>12/18</sub> fatty acid monoesters and diesters of addition products of 1 to
     30 moles of ethylene oxide with glycerol;
- 10 glycerol mono- and diesters and sorbitan mono- and diesters of saturated and unsaturated fatty acids containing 6 to 22 carbon atoms and ethylene oxide addition products thereof;
  - alkyl mono- and oligoglycosides containing 8 to 22 carbon atoms in the alkyl group and ethoxylated analogs thereof;
- addition products of 15 to 60 moles of ethylene oxide with castor oil and/or hydrogenated castor oil;
- polyol esters and, in particular, polyglycerol esters such as, for example, polyglycerol polyricinoleate, polyglycerol poly-12-hydroxy-stearate or polyglycerol dimerate. Mixtures of compounds from several of these classes are also suitable;
  - addition products of 2 to 15 moles of ethylene oxide with castor oil and/or hydrogenated castor oil;
- partial esters based on linear, branched, unsaturated or saturated C<sub>6/22</sub> fatty acids, ricinoleic acid and 12-hydroxystearic acid and glycerol, polyglycerol, pentaerythritol, dipentaerythritol, sugar alcohols (for example sorbitol), alkyl glucosides (for example methyl glucoside, butyl glucoside, lauryl glucoside) and polyglucosides (for example cellulose);
- mono-, di and trialkyl phosphates and mono-, di- and/or tri-PEG-alkyl
   phosphates and salts thereof;

15

20

25

30

- wool wax alcohols;
- polysiloxane/polyalkyl polyether copolymers and corresponding derivatives;
- mixed esters of pentaerythritol, fatty acids, citric acid and fatty alcohol according to **DE-PS 11 65 574** and/or mixed esters of fatty acids containing 6 to 22 carbon atoms, methyl glucose and polyols, preferably glycerol or polyglycerol, and
  - polyalkylene glycols.

The addition products of ethylene oxide and/or propylene oxide with fatty alcohols, fatty acids, alkyl phenols, glycerol monoesters and diesters and sorbitan monoesters and diesters of fatty acids or with castor oil are known commercially available products. They are homolog mixtures of which the average degree of alkoxylation corresponds to the ratio between the quantities of ethylene oxide and/or propylene oxide and substrate with which the addition reaction is carried out.

C<sub>8/18</sub> alkyl mono- and oligoglycosides, their production and their use are known from the prior-art literature. They are produced in particular by reacting glucose or oligosaccharides with primary alcohols containing 8 to 18 carbon atoms. So far as the glycoside component is concerned, both monoglycosides where a cyclic sugar unit is attached to the fatty alcohol by a glycoside bond and oligomeric glycosides with a degree of oligomerization of preferably up to about 8 are suitable. The degree of oligomerization is a statistical mean value on which a homolog distribution typical of such technical products is based.

Typical examples of anionic emulsifiers are soaps, alkyl benzenesulfonates, alkanesulfonates, olefin sulfonates, alkylether sulfonates, glycerol ether sulfonates,  $\alpha$ -methyl ester sulfonates, sulfofatty acids, alkyl sulfates, alkyl ether sulfates such as, for example, fatty alcohol ether sulfates, glycerol ether sulfates, hydroxy mixed ether sulfates, monoglycerWO 01/01930 12 PCT/EP00/05813

ide (ether) sulfates, fatty acid amide (ether) sulfates, mono- and dialkyl sulfosuccinates, mono- and dialkyl sulfosuccinamates, sulfotriglycerides, amide soaps, ether carboxylic acids and salts thereof, fatty acid isethionates, fatty acid sarcosinates, fatty acid taurides, N-acylamino acids such as, for example, acyl glutamates and acyl aspartates, alkyl oligoglucoside sulfates, protein fatty acid condensates (particularly wheat-based vegetable products) and alkyl (ether) phosphates. If the anionic surfactants contain polyglycol ether chains, they may have a conventional homolog distribution although they preferably have a narrow-range homolog distribution.

10

15

20

25

30

5

Other suitable emulsifiers are zwitterionic surfactants. Zwitterionic surfactants are surface-active compounds which contain at least one quaternary ammonium group and at least one carboxylate and one sulfonate group in the molecule. Particularly suitable zwitterionic surfactants are the so-called betaines, such as the N-alkyl-N,N-dimethyl ammonium glycinates, for example cocoalkyl dimethyl ammonium glycinate, N-acylaminopropyl-N,N-dimethyl ammonium glycinates, for example cocoacylaminopropyl dimethyl ammonium glycinate, and 2-alkyl-3-carboxymethyl-3-hydroxyethyl imidazolines containing 8 to 18 carbon atoms in the alkyl or acyl group and cocoacylaminoethyl hydroxyethyl carboxymethyl glycinate. The fatty acid amide derivative known under the CTFA name of Cocamidopropyl Betaine is particularly preferred. Ampholytic surfactants are also suitable emulsifiers. Ampholytic surfactants are surface-active compounds which, in addition to a C8/18 alkyl or acyl group, contain at least one free amino group and at least one -COOHor -SO<sub>3</sub>H- group in the molecule and which are capable of forming inner salts. Examples of suitable ampholytic surfactants are N-alkyl glycines, Nalkyl propionic acids, N-alkylaminobutyric acids, N-alkyliminodipropionic acids, N-hydroxyethyl-N-alkylamidopropyl glycines, N-alkyl taurines, N-alkyl sarcosines, 2-alkylaminopropionic acids and alkylaminoacetic acids containing around 8 to 18 carbon atoms in the alkyl group. Particularly

10

15

20

25

30

WO 01/01930 13 PCT/EP00/05813

preferred ampholytic surfactants are N-cocoalkylaminopropionate, cocoacylaminoethyl aminopropionate and  $C_{12/18}$  acyl sarcosine. According to the invention, other suitable emulsifiers besides ampholytic surfactants are quaternary emulsifiers, those of the esterquat type, preferably methyl-quaternized difatty acid triethanolamine ester salts, being particularly preferred.

Protective colloids suitable as surface modifiers are, for example, natural water-soluble polymers such as, for example, gum arabic, starch, water-soluble derivatives of water-insoluble, polymeric natural materials such as, for example, cellulose ethers, such as methyl cellulose, hydroxyethyl cellulose, carboxymethyl cellulose or modified carboxymethyl cellulose, hydroxyethyl starch or hydroxypropyl guar, and synthetic water-soluble polymers such as, for example, polyvinyl alcohol, polyvinyl pyrrolidone, polyalkylene glycols, polyaspartic acid and polyacrylates.

The surface modifiers are used in a concentration of generally 0.1 to 50% by weight and preferably 1 to 20% by weight, based on the calcium salts.

Preferred surface modifiers are, above all, the nonionic surfactants in a quantity of 1 to 20% by weight, based on the weight of the calcium salt. Nonionic surfactants of the alkyl-C<sub>8-16</sub>-(oligo)glucoside type and hydrogenated castor oil ethoxylate type have proved to be particularly effective. The composite materials according to the invention are prepared by precipitation reactions from aqueous solutions of water-soluble calcium salts and aqueous solutions of water-soluble phosphate and/or fluoride salts, the precipitation being carried out in the presence of protein components. This is preferably done by adding the protein components in pure, dissolved or colloidal form to the alkaline aqueous phosphate and/or fluoride salt solution or to the alkaline solution of the calcium salt before the precipitation reaction. Alternatively, the protein components may be initially introduced in pure, dissolved or colloidal form followed by addition of the

10

15

20

25

30

WO 01/01930 14 PCT/EP00/05813

alkaline calcium salt solution and the alkaline phosphate and/or fluoride salt solution either successively in any order or at the same time.

In the production process according to the invention, the individual components may be fitted together in basically any order. Ammonia is preferably used as the alkalizing agent.

In another variant of the production process according to the invention, the precipitation is carried out from an acidic solution of a water-soluble calcium salt together with a stoichiometric quantity of a water-soluble phosphate and/or fluoride salt or from an acidic solution of hydroxylapatite with a pH below 5, preferably at a pH below 3, by raising the pH with aqueous alkali or ammonia in the presence of the protein components.

In another variant of the process, the protein components are added, preferably in dissolved or dispersed form, to nanoparticulate calcium salts in pure or dispersed form or to dispersions of nanoparticulate calcium salts prepared by precipitation reactions from aqueous solutions of water-soluble calcium salts and aqueous solutions of water-soluble phosphate and/or fluoride salts, the addition being made in any order.

The solution or dispersion of the protein component is preferably introduced first and a dispersion of the nanoparticulate calcium salt subsequently added.

In all processes involving the precipitation of apatite, it is advisable to keep the pH below 5 and preferably below 3. In all the production processes mentioned, the dispersion of the composite material formed may if desired be separated off from the solvent and the other constituents of the reaction mixture by methods known to the expert, such as filtration or centrifugation for example, and isolated in solvent-free form by subsequent drying, for example by freeze drying.

In all the production processes, water is preferably used as the solvent although organic solvents, for example C<sub>1-4</sub> alcohols or glycerol,

10

15

20

25

30

WO 01/01930 15 PCT/EP00/05813

may also be used in individual steps of the production process.

The production of the composite materials according to the invention in which the primary particles of the calcium salts are surface-modified may be carried out by precipitation processes similar to those described above, except that the precipitation of the nanoparticulate calcium salts or the composite materials is carried out in the presence of one or more surface modifiers.

In a preferred embodiment, the surface-modified nanoparticulate calcium salts are first produced by a precipitation reaction between aqueous solutions of calcium salts and aqueous solutions of phosphate and/or fluoride salts in the presence of the surface modifiers. The surface-modified nanoparticulate calcium salts may then be freed from accompanying products of the reaction mixture, for example by concentration under reduced pressure and subsequent dialysis. A dispersion of the surface-modified calcium salt with any desired solids content may additionally be prepared by removing the solvent. The composite material of surface-modified calcium salt and protein components is then formed by addition of the protein components in pure, dissolved or colloidal form - again in any order - and, if necessary, after-reaction for 1 to 100 minutes at elevated temperature, preferably in the range from 50 to 100°C.

Other processes such as those described in German patent application **DE 19858662.0** may be used to produce dispersions of surface-modified calcium salts.

The composite materials according to the invention, more particularly those of hydroxylapatite, fluorapatite and calcium fluoride, are suitable as a remineralizing component for the production of tooth cleaning and/or dental care compositions. The structured form of the composites and the particle size of the calcium compounds present in them enables the effect of strengthening dental enamel and sealing lesions and dentine

channels to be developed particularly quickly and completely. The tooth cleaning and dental care compositions may be formulated, for example, as pastes, liquid creams, gels or mouthwashes. The composite materials according to the invention are readily dispersed, even in liquid preparations, and remain stably dispersed, i.e. have no tendency to sediment.

A preferred embodiment are toothpastes containing silica, polishes, humectants, binders and flavors which contain 0.1 to 10% by weight of composite materials according to the invention containing nanoparticulate calcium salts from the group consisting of hydroxylapatite, fluorapatite and calcium fluoride.

The tooth cleaning and dental care preparations may contain the usual components and auxiliaries of such compositions in the usual quantities. For toothpastes, these are, for example,

15

25

10

5

- abrasives and polishes such as, for example, chalk, silicas, aluminium hydroxide, aluminium silicates, calcium pyrophosphate, dicalcium phosphate, insoluble sodium metaphosphate or synthetic resin powder
- humectants such as, for example, glycerol, 1,2-propypene glycol, sorbitol, xylitol and polyethylene glycols
  - binders and consistency factors, for example natural and synthetic water-soluble polymers and water-soluble derivatives of natural materials, for example cellulose ethers, layer silicates, fine-particle silicas (aerogel silicas, pyrogenic silicas)
  - flavors, for example peppermint oil, spearmint oil, eucalyptus oil, aniseed oil, fennel oil, caraway seed oil, menthyl acetate, cinnamaldehyde, anethol, vanillin, thymol and mixtures of these and other natural and synthetic flavors
- 30 sweeteners such as, for example, saccharin sodium, sodium

cyclamate, aspartame, acesulfan K, stevioside, monellin, glycyrrhicin, dulcitol, lactose, maltose or fructose

- preservatives and antimicrobial agents such as, for example, phydroxybenzoic acid esters, sodium sorbate, triclosan, hexachlorophene, phenyl salicylic acid ester, thymol, etc.,
- pigments such as, for example, titanium dioxide or pigment dyes for producing colored stripes
- buffers such as, for example, primary, secondary or tertiary alkali metal phosphates or citric acid/sodium citrate,
- wound-healing and anti-inflammatory agents such as, for example, allantoin, urea, azulene, panthenol, acetyl salicylic acid derivatives, plant extracts, vitamins, for example retinol or tocopherol.

The composite materials according to the invention, more particularly those of hydroxylapatite and fluorapatite, are capable of inducing or promoting biomineralization in bone tissue. Accordingly, they are also suitable as a biomineralizing component for the production of compositions for restoring or reforming bone material, for example compositions for the treatment of bone defects and bone fractures and for promoting the "growing in" of implants.

For coating implants, the composite materials according to the invention may be applied, for example, by the standard methods known to the expert of dip coating or plasma spraying.

For use as injectable bone substitute materials, the composite materials according to the invention may be combined with suitable other substances such as, for example, glycosaminoglycans or proteins, and with suitable solvents and auxiliaries such as, for example, a dilute aqueous phosphate buffer.

The following Examples are intended to illustrate the invention.

25

25

## **Examples**

## 1. Preparation of protein solutions or dispersions

- 5 1.1 Type A gelatine:
  - 100 ml water were added to 10 g type A gelatine (gelatine obtained by acidic hydrolysis of pig skin) and boiled once in a microwave.
  - 1.2 Type A gelatine and casein:
- 10 100 ml water and 10 ml of the supernatant phase of a casein solution saturated at 20°C and then centrifuged at 5,000 r.p.m. were added to 10 g type A gelatine and boiled once in a microwave.
  - 1.3 Hydrolyzate of type A gelatine:
- 15 100 ml water and the alkaline protease Savinase (manufacturer: Novo Nordisk) in a concentration of 0.005% enzyme dry matter, based on the gelatine dry mater, were added to 10 g type A gelatine. After stirring for 20 h at 20°C, the whole was boiled once in a microwave.

1.4 Hydrolyzate of type A gelatine and casein:

100 ml water were added to 10 g type A gelatine and 1 g casein and the whole was hydrolyzed overnight at room temperature with the alkaline protease Savinase (manufacturer: Novo Nordisk) in a concentration of 0.005% enzyme dry matter, based on the dry matter of the protein components, boiled once in a microwave and then filtered.

- 1.5 Type B gelatine:
- 30 100 ml water were added to 10 g type B gelatine (gelatine obtained

10

20

25

30

by alkaline hydrolysis of cowhide) and boiled once in a microwave.

1.6 Type B gelatine and casein:

100 ml water and 10 ml of the supernatant phase of a casein solution saturated at 20°C and then centrifuged at 5,000 r.p.m. were added to 10 g type B gelatine and boiled once in a microwave.

1.7 Hydrolyzate of type B gelatine:

100 ml water and the alkaline protease Savinase (manufacturer: Novo Nordisk) in a concentration of 0.005% enzyme dry matter, based on the gelatine dry mater, were added to 10 g type B gelatine. After stirring for 20 h at 20°C, the whole was boiled once in a microwave.

15 1.8 Hydrolyzate of type B gelatine and casein:

100 ml water were added to 10 g type B gelatine and 1 g casein and the whole was hydrolyzed overnight at room temperature with the alkaline protease Savinase (manufacturer: Novo Nordisk) in a concentration of 0.005% enzyme dry matter, based on the dry matter of the protein components, boiled once in a microwave and then filtered.

2. Production of composite materials by precipitation reactions in the presence of the protein components

2.1 Composite material of hydroxylapatite and type A gelatine:
2.21 g calcium chloride were dissolved in 137 ml deionized water, heated to 25°C and adjusted to pH 11 with 25% by weight aqueous ammonia solution. 20 ml of the protein solution prepared in accordance with Example 1.1 and heated in a water bath to 30-40°C

were then added with vigorous stirring. An aqueous solution of 1.58 g diammonium hydrogen phosphate in 26 ml deionized water, which had been heated to 25°C and adjusted to pH 11 with ammonia solution, was then slowly added dropwise over a period of 1 hour during which the composite material was precipitated. At the beginning of the dropwise addition, the pH was 10.4 and was kept at about 10 by addition of more ammonia solution. After a reaction time of 20 h (25°C, with stirring), the pH of the aqueous suspension had fallen to 9.5. The composite material precipitated was removed by centrifuging at 5,000 r.p.m., washed with deionized water heated to ca. 30-40°C and freeze-dried. 2.2 g composite material were obtained. Elemental analysis revealed a carbon content of 2.3% which corresponds to a content of protein material of 5.6% by weight, based on the total quantity of composite material.

15

10

5

2.2-2.8 Composite materials of hydroxylapatite and other protein components

Composite materials of hydroxylapatite and the other protein components described in 1.2 to 1.8 were obtained in the same way as described in Example 2.1.

- 3. Production of composite materials by incorporating dispersions of surface-modified calcium salts in protein components
  - 3.1 Composite material of hydroxylapatite and Gelatine Bloom 300:

Solutions A and B were first separately prepared.

25

10

15

### Solution A:

25.4 g calcium nitrate tetrahydrate and 8.50 g diammonium hydrogen phosphate were separately dissolved in 100 g deionized water. The two solutions were then combined to form a white precipitate. After addition of 10 ml of 37% by weight HCl, a clear solution was obtained.

### Solution B:

200 ml deionized water, 200 ml 25% by weight aqueous ammonia solution and 20 g Plantacare® 1200 were combined and cooled to 0°C in an ice bath. Solution A was added to solution B with vigorous stirring, a hydroxylapatite precipitate being formed. After excess ammonia had been removed, the dispersion was purified by dialysis. The dispersion was then concentrated by evaporation in a rotary evaporator by determining the quantity of water separated to such an extent that the dispersion had a solids content, expressed as hydroxylapatite, of 7.5% by weight.

This dispersion was added at room temperature to 100 ml of a 10% by weight aqueous solution of Gelatine Bloom 300 (manufacturer: Fluka) prepared in accordance with Example 1.1, then heated to 80°C and stirred at that temperature for 5 minutes. The whole was then left to solidify at room temperature to form the composite material.

25

20

## 4. Tooth creams containing calcium salt composite materials

Formulation Examples	4.1	4.2
Sident® 8	10.0% by weight	10.0% by weight
Sident® 22S	7.0% by weight	7.0% by weight
Sipernat® 320DS	0.8% by weight	0.8% by weight
Composite material of Example 2.1	5.0% by weight	-
Composite material of Example 3.1	-	5.0% by weight
Polywachs® 1550	2.0% by weight	2.0% by weight
Texapon® K1296	1.5% by weight	1.5% by weight
Titanium dioxide	1.0% by weight	1.0% by weight
Cekol® 500 T	1.0% by weight	1.0% by weight
Na fluoride	0.33% by weight	0.33% by weight
Na benzoate	0.25% by weight	0.25% by weight
Flavor	1.0% by weight	1.0% by weight
Tagat® S	0.2% by weight	-
Na saccharinate	0.15% by weight	0.15% by weight
Trisodium phosphate	0.10% by weight	0.10% by weight
Sorbitol (70% in water)	31.0% by weight	31.0% by weight
Water	to 100% by weight	to 100% by weight

The following commercial products were used:

## Plantacare® 1200:

C<sub>12-16</sub> alkylglycoside, ca. 50% in water,

manufacturer: HENKEL KGaA

## Sident® 8:

Synth. amorph. silica, BET 60 m²/g, compacted bulk density: 350 g/l

manufacturer: DEGUSSA

## Sident® 22S:

Hydrogel silica, BET 140 m<sup>2</sup>/g, compacted bulk density: 100 g/l

manufacturer: DEGUSSA

Polywachs® 1550:

Polyethylene glycol, MW: 1550, softening point: 45-50°C

Manufacturer: RWE/DEA

Texapon® K 1296:

Sodium lauryl sulfate powder

Manufacturer: HENKEL KGaA

Cekol® 500 T:

Sodium carboxymethyl cellulose, viscosity (2% in water, Brookfield

LVF 20°C): 350-700 mPa.s

Supplier: Nordmann-Rassmann

Tagat® S:

Polyoxyethylene-(20)-glyceryl monostearate

Manufacturer: Tego Cosmetics (Goldschmidt)

20

30

### **CLAIMS**

- 1. Composite materials comprising
- poorly water-soluble calcium salts selected from phosphates,
   fluorides and fluorophosphates which if desired may additionally contain hydroxyl and/or carbonate groups, the calcium salts being present in the form of nanoscale primary particles with a mean particle diameter of 10 to 300 nm, and
  - b) protein components selected from proteins, protein hydrolyzates and protein hydrolyzate derivatives.
  - 2. Composite materials as claimed in claim 1, characterized in that the calcium salts are present in the form of rodlet-like primary particles with a thickness of 2 to 50 nm and a length of 10 to 150 nm.
- 15 3. Composite materials as claimed in claim 1 or 2, characterized in that the protein components are selected from structure-forming proteins, protein hydrolyzates and protein hydrolyzate derivatives.
  - 4. Composite materials as claimed in any of claims 1 to 3, characterized in that the protein components are selected from collagen, gelatine, keratin, casein, wheat protein, rice protein, soya protein, almond protein and their hydrolyzates and hydrolyzate derivatives.
  - 5. Composite materials as claimed in claim 4, characterized in that the protein components are selected from gelatine, casein and their hydrolyzates.
- 25 6. Composite materials as claimed in any of claims 1 to 5, characterized in that the calcium salts present as nanoscale primary particles are encapsulated with one or more surface modifiers.
  - 7. Composite materials as claimed in any of claims 1 to 6, characterized in that the calcium salt is selected from the group consisting of hydroxylapatite and fluorapatite.

- 8. Composite materials as claimed in any of claims 1 to 7, characterized in that the percentage content of protein components in the composite material is between 0.5 and 10% by weight, based on the total weight of the composite material.
- 9. A process for the production of the composite materials claimed in any of claims 1 to 8 by precipitation reactions from aqueous solutions of water-soluble calcium salts and aqueous solutions of water-soluble phosphate and/or fluoride salts, characterized in that the precipitation is carried out in the presence of protein components.
- 10 10. A process for the production of composite materials as claimed in claim 9 by precipitation from an acidic solution of a water-soluble calcium salt and a stoichiometric quantity of a water-soluble phosphate and/or fluoride salt with a pH below 3 by raising the pH with aqueous alkalis or ammonia in the presence of protein components.
- 15 11. The use of the composite materials claimed in any of claims 1 to 8 as remineralizing components in tooth cleaning and/or dental care compositions.
  - 12. The use of the composite materials claimed in any of claims 1 to 8 as a biomineralization-inducing or -promoting component in compositions for the treatment of tooth or bone defects.
  - 13. The use of the composite materials claimed in any of claims 1 to 8 for coating implants.
  - 14. Toothpastes containing the composite materials claimed in any of claims 1 to 8.
- 25 15. Compositions for inducing or promoting the formation of new bone tissue containing the composite materials claimed in any of claims 1 to 8.

H 4086 PCT/US KROPF, et al. "COMPOSITE MATERIALS COMPRISED OF CALCIUM COMPOUNDS AND PROTEIN CONSTITUENTS"

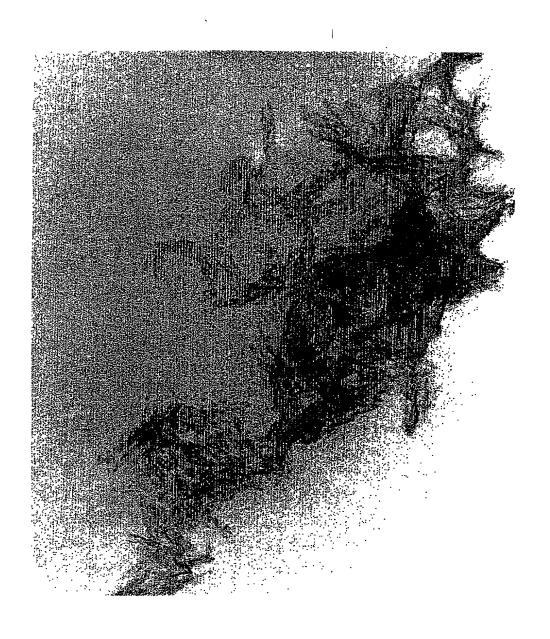


FIG. 1

H 4086 PCT/US KROPF, et al. "COMPOSITE MATERIALS COMPRISED OF CALCIUM COMPOUNDS AND PROTEIN CONSTITUENTS"

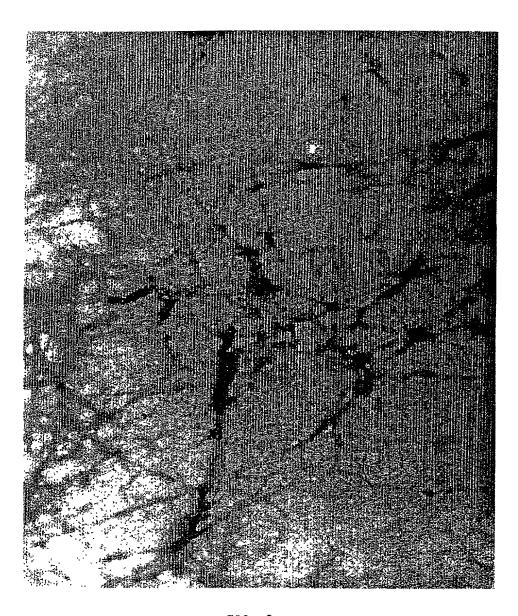


FIG. 2

xpress Mail" mailing label numb	per				PTO/SB/01 (			
Type a plus sign (+) inside this l	00X →	Р	· ·	•	hrough: 10/31/98 OMB 0651- PARTMENT OF COMMERC			
0010/PTO Rev. 6/95	U.S Department of Commerce Patent and Trademark Office	Attor	ney Docket	H 4086 PC	T/US			
DECLARA	TION FOR		Named	KROPF, C	hristian			
UTILITY O			COM	IPLETE IF KN	VOWN			
PATENT AP		Appl	ication Number					
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	Filing	g Date					
	R X Declaration Submitted after	Grou	ıp Art Unit					
Submitted with Initial Filing	Initial Filing	Exar	miner Name					
the specification of which is attached hereto  OR  X was filed on (MM/DD/YY)  Application Number PCT/EP00  I hereby state that I have reviewed amendment specifically referred to	n/05813 and was am	nended o	as United S		lumber or PCT International  (if applicable). s amended by any			
I acknowledge the duty to disclose	information which is material to pater its under Title 35, United States Codi ternational application which designa thecking the box, any foreign applicat e application on which priority is clair							
having a filing date before that of the Prior Foreign Application Number(s)	e application on which priority is clair  Country	Fo	reign Filing Date MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO			
199 30 335.5	Germany	7/2/1999						
	numbers are listed on a supplementa							
	le 35, United States Code 3119(e) of	any Unite	· · · · · · · · · · · · · · · · · · ·	plication(s) listed be				
Application Number(s)	Filing Date (MM/DD/YYYY)		a a s	pplication numbers are listed on a supplemental priority heet attached here	on a ntal priority			

Туре а	a plus	sign (+	) inside	this	box →
i ype c	a pius	31911 ( .	<i>,</i> 1113140	11110	DUA 7

H 4086 PCT/US

	DECLA	RATIC	N —					age :			
I hereby claim the designating the L United States or disclose informat date of the prior a	e benefit under Title 35 Inited Sates of Americ PCT international app ion which is material t application and the nat	5, United State a, listed belo lication in the c patentability ional or PCT	tes Code ∍12 w and, insofa manner prov y as defined i international	0 of any Un ar as the sub vided by the in Title 37, 0 filing date of	ited States a oject matter first paragra Code of Fede of this applic	pplication(s), of each of the oph of Title 35 oral Regulatio ation.	or ∍365© of claims of th 5, United Sta ns ∍1.56 whi	any PCT is applicates Code ich becar	internation ation is not o ∍112.1 ack ne available	al application disclosed in the prior nowledge the duty to between the filing	
U.S. F	Parent	PC	T Parent		Parent	Filing D	ate	Pare	nt Pater	nt Number	
Application	n Number	<del>                                      </del>	lumber			DD/YYYY	<u>r)  </u>		if appli	cable)	
		POTE	P00/0581	3	6/23/20						
Additional (	J.S. or PCT internation	nal applicatio	n numbers a	re listed on	a supplemer	ital priority sh	eet attached	l hereto.			
As a named inve Trademark Office	ntor, I hereby appoint connected therewith	the following	attorney(s) a	nd/or agent	(s) to prosec	ute this appli	cation and to	transact	all busines:	s in the Patent and	
				•		Customer	or label				
Firm Name OR						Number		L			
X List Attorne	ey(s) and/or agent(s) n	ame and regi	istration num	ber below:							
	Name		Registra Numb			١	Name		Registration Number		
Wayne C. J Glenn E. J. Stephen D.	Murphy		21,062 33,539 33,243		Kimberly Steven	/ R. Hild C. Bauma	เท			39,224 33,832	
Additional a	ittorney(s) and/or ager	nt(s) named o	n a supplem	ental sheet	attached he	eto.					
Please direct all to:	correspondence	Custome Number	er or lab	el	(004	23	OR	х	Fill in corr address t	orrespondence s below	
Name	Glenn E. J. Mu	ırphy							• ·		
Address	Henkel Corpor										
Address	2500 Renaissa	ance Blvd,	Suite 200			D.4		<del></del>	2*.	140406	
City	Gulph Mills	Tolork	222	610-278	ate	PA	Fax		<sup>z</sup> ip §10-278-€	19406	
willful false s Title 18 of the	USA clare that all state and belief are bel tatements and the United States C t issued thereon.	ieved to b e like so r	ide herein e true; and nade are i	of my ow d further to ounishable	n knowle hat these le by fine	statemen or impriso	ue and that ts were m nment, or	at all st ade wi	atements th the kno under Sec	s made on owledge that ction 1001 of	
Name of So	ole or First Inv	entor:			•	A	petition has t	been filed	for this uns	signed inventor	
Given Name	Christian		Middle Initial		Family Name	KROP	·F			Suffix e.g. Jr.	
Inventor's Signature	al.	1621	<u>`</u> _	No	N	•	Dat	te	2002	-01-02	
Residence: Cit	Duesseldorf	- 1	State	1	Count	Germs	201/	<u> </u>	itizanshin	Germany	

Type a plus sign (+) inside this box →

40597 Duesseldorf

Caecilienstrasse 4

State

Additional inventors are being named on supplemental sheet(s) attached hereto

Zip

Country

Germany

Post Office Address

Post Office Address

City

H 4086 PCT/US

Applicant Authority

	DECLARATION me of Additional Joint Inventor, if any:										ADDITIONAL INVENTOR(S) Supplemental Sheet							
Na	me of	Addi	tion	al Joint In	vento	r, if any	<b>':</b>					A p	etition ha	s been fil	ed for thi	s un	signed	
Give Nan		Mai	rcel			Middle Initial				Far Nai	nily ne	R	ОТН			Su e.g	ffix <sub>J</sub> . Jr.	
	ntor's nature													Date				
Res	idence:	City	Due	esseldorf		State	Ţ			C	ountry	G	ermany		Citizensl	nip	Germ	any
Pos	t Office /	\ddres	s	Am Nettche	sfeld 21		_					-						
Pos	t Office /	Addres	s															
City	4058	9 Due	sse	ldorf	State		Zi	ip			Cou	ntry	German	у	Applica Authori	nt ty		
Na	me of	Addi	tion	al Joint In	vento	r, if any	<b>/:</b>					A p	etition ha	s been fil	ed for thi	s un	signed	
Give Nar		Ulri	ike			Middle Initial				Far Nai		В	RUENIN	<b>GHAUS</b>		Su e.g	ffix ı. Jr.	
	entor's nature								3.72					Date		***		
Res	idence:	City	Мо	nheim		State	State				ountry	G	ermany		Citizens	nip	Germ	any
Pos	t Office	Addres	s	An der Dorf	strasse	6												
Pos	t Office	Addres	ss															
City	4078	9 Moi	nhei	m	State		Zi	р			Cou	ntry	German	у	Applica Authori	nt ty		
Na	me of	Addi	tion	ıal Joint In	vento	r, if any	<b>/:</b>						etition ha entor	s been file	ed for thi	s un	signed	
Give Nar		Ste	fan			Middle Initial				Far Nai		М	UELLNE	R		Sur e.g	ffix . Jr.	
	entor's nature													Date				
Res	idence:	City	Lan	genfeld		State				C	ountry	G	ermany		Citizensh	nip	Germ	any
Pos	t Office	Addres	s	Hagebutten	weg 21													
Pos	t Office	Addres	s															
City	4076	34 Lan	gen	feld	State		Zi	p			Cou	ntry	German	y	Applica Authori	nt y		
Na	me of	Addi	tion	al Joint In	r, if any	<b>7:</b>						etition ha entor	s been file	ed for thi	s un	signed	:	
Given Name Albrecht Middle Initial										Far Nar	nily ne	w	EISS			Suf e.g	ffix . Jr.	
	entor's nature													Date				
Res	idence:	City	Lan	genfeld		State				Co	ountry	G	ermany		Citizensh	ip	Germa	any
Pos	t Office	Addres	s	Forellenwe	g 37													
Pos	t Office	Addres	s			·			,									
City	4076	64 Lan	gen	feld	State		Zip Country Germany Applicant Authority											
	× Addi	tional	inver	ntors are being	g named	on supp	leme	nental sheet(s) attached hereto										

_	Type a	a plus !	sign (+) ir	nside this box →	<u>,   '</u>	1												
				ECLAR		N								IONAL IN			5)	
	Nam	e of /	Additio	onal Joint In	vento	r, if any	:						etition ha entor	as been file	ed for thi	s un	signed	
ſ	Given Name		Ulrich	1		Middle Initial				Fan Nan	nily me	sc	CHOERK	(EN			ıffix g. Jr.	
Ī	Invento Signat													Date				
Ī	Resid	dence: C	City Le	eichlingen		State				C/	ountry	G	ermany		Citizensh	nip	Germa	any
	Post C	Office F	Address	Neustrasse	12													
	Post C	Office /	Address				_	_				_						
	City	4279	99 Leichli	ingen	State		Z	Zip			Coun	ntry	German	ıy	Applica Authorit	int ity		
	Nam	ie of /	Additio	onal Joint In	vento	r, if any	:						etition ha	as been file	ed for thi	s un	signed	
	Given Name		Lotha	i <b>r</b>		Middle Initial				Fan Nan	nily me	KII	NTRUP				ıffix g. Jr.	
	invent Signat							_		_		_		Date		- Tra		
	Resid	dence: C	City Di	uesseldorf		State				Cr	ountry	G	ermany		Citizensh	nip	Germa	any
	Post C	Office A	Address	An der Gara	ather Mc	otte 15		_		_						_		
	Post C	Office A	Address				_	_		_						_		
	City	4059	95 Duesse	eldorf	State	Zip				_ 1	Coun	ntry	German	ıy	Applica Authorit	nt tv		
	Nam	ie of /	Additio	onal Joint In	vento	r, if any:	Ľ				A pe	etition ha	as been file	<u> </u>		signed		
	Given Name		Burkh	nard		Middle Initial				Fam Nam		ES	SCHEN			Suf e.g.	ffix J. Jr.	
	Invente Signat						_	_						Date				
ļ	Reside	dence: C	City Du	uesseldorf		State				Cc	ountry	G€	ermany		Citizensh	ıip	Germa	any
	Post C	Office A	Address	Doeberitzer	Strasse	a 18	_	_										
		T	Address				_	_							<del>-</del>			
	City	4059	99 Duesse	eldorf	State		Zi	ip			Count	itry	Germany	у	Applicar Authorit	nt ty		
	Nam	e of /	Additio	onal Joint In	ventor	r, if any:						A pe	etition ha	ıs been file	ed for this	s un	signed	
	Given Name		Ameri	igo		Middle Initial				Fam Nam	ily ne	PA	STURA			Suff e.g.	ffix , Jr.	
	Invento Signat													Date				
	Reside	dence: C	City Wi	'itten		State		_		Со	ountry	Ge	ermany		Citizensh	iip	Germa	any
Ì	Post C	Office A	Address	Sauerbruch	strasse	3a						_						
ļ	Post C	Office A	Address				_	<del>-</del>								_		
1	City	5845	53 Witten		State		Zi	p		Country Germany Applicant Authority					<del></del> -			
ſ	×	Addir	tional inv	entors are bein	g named	i on supple	eme	ental	I sheet	et(s) attached hereto								

Type a	ype a plus sign (+) inside this box →  ADDITIONAL INVENTOR(S)																
			DE	ECLAR.	ATIC	N							ONAL IN			5)	
Nam	e of A	Addi	tior	nal Joint In	vento	r, if any	<b>':</b>				A p	etition ha entor	s been fil	ed for thi	s un	signed	
Given Name		Pet	er			Middle Initial	T		Far Na	nily me	w	UELKNI	TZ	:		ffix . Jr.	
Invento Signat													Date				
Reside	ence: (	City	Lei	chlingen		State			C	ountry	G	ermany		Citizensh	nip	Germ	any
Post C	Office A	ddres	s	lm Erlengru	nd 9												
Post C	office A	ddres	s														
City	4279	9 Lei	hlin	gen	State		Zip			Cou	ntry	German	у	Applica Authorit	nt y		
Nam	e of /	Addi	tion	al Joint In	vento	r, if any	:				A p inve	etition ha entor	s been fil	ed for this	s un	signed	
Given Name		Ru	ediç	jer	•	Middle Initial			Far Nar		KN	NIEP			Sur e.g	fix . Jr.	
Invento Signat													Date				
Residence: City Langenfeld State Country Germany Citizenship Germany Post Office Address Wupperstrasse 26a																	
Post C																	
Post C	Post Office Address																
City	4076	4 Lan	geni	feld	State		Zip			Cour	ntry	German	У	Applicar Authorit	nt y		<u>.                                    </u>
Name	e of A	Addi	tion	al Joint In	ventor	, if any	:				A poinve	etition has	s been file	ed for this	un	signed	
Given Name		Har	าร			Middle Initial			Fan Nan		LA	SKA			Suf e.g.		
Invento Signat													Date				
Reside	ence: C	ity	Lan	genfeld		State			Co	untry	Ge	ermany		Citizensh	ip	Germa	any
Post O	ffice A	ddres	s	Sperberstra	sse 10												
Post C	ffice A	ddres	s	·				,									
City	4062	7 Lan	genf	eld	State		Zip			Coun	itry	Germany	<i>'</i>	Applican Authority	it /		
Name	e of A	Addit	ion	al Joint in	ventor	, if any	•				A pe	etition has ntor	s been file	ed for this	uns	signed	
Given Name		Mic	hae			Middle Initial	T		Farr Nan	nily ne	ME	INDERS			Suff e.g.		
Invento Signati													Date			·	
Reside	Residence: City Krefeld State Country Germany Citizenship Germany																
Post O	Post Office Address Am Eichenhof 11																
Post O	ost Office Address																
City	ty 47800 Krefeld State Zip Country Germany Applicant Authority																
х	Additi	onal i	nven	tors are being	named	on supple	ment	al sheet(s	s) at	tached	here	eto					

sign (+) inside this box →

1	u,	
;	****	
	102	
	2	
	2 22 22 20 20 20 20 20 20 20 20 20 20 20	
*****		
	ng.	
:	E	
:	200	
	2	*****
	<b>=</b> :5	

		DE	CLARA	ATIO	N							ONAL IN plement				
Nam	e of /	Addition	nal Joint Inv	ventor	, if any			,		A po	etition ha	s been file	ed for this	s unsi	gned	
Given Name		Hans			Middle Initial			Fan Nar		DC	LHAINE	=		Suffix e.g. J		
Invent Signat						-						Date				
Reside	ence: (	City Gle	hn		State			C	ountry	Ge	ermany		Citizensh	gir	Germa	any
Post C	Office A	ddress	Bendgasse	20	•											
Post C	Office A	ddress														
City	4135	2 Glehn		State		Zip			Cou	ntry	German	у	Applica Authorif	nt ty		
Nam	e of A	Additior	nal Joint In	ventor	, if any					A poinve	etition ha ntor	s been file	ed for thi	s unsi	gned	
Given Name					Middle Initial			Far Nai						Suffix e.g. J		
Invent Signa	or's ture											Date			-	
Resid	ence: (	City	<del></del>		State			C	ountry				Citizensh	nip		
Post 0	Office A	Address														
Post 0	Post Office Address															
City				State		Zip			Cou	ntry			Applica Authorit	nt ty		
Nam	e of	Additior	nal Joint In	ventor	, if any					A poinve	etition ha ntor	s been file	ed for this	s unsi	gned	
Given Name					Middle Initial			Far Na	nily ne					Suffix e.g. J		
Invent Signa												Date				
Resid	ence: (	City			State			C	ountry	<u> </u>			Citizensh	nip		
Post 0	Office A	Address														
Post 0	Office A	Address					,				1					
City				State		Zip			Cou	ntry		-	Applica Authorit			
Nam	e of	Additior	nal Joint In	ventor	, if any					A po	etition ha	s been file	ed for this	s unsi	gned	
Given Name					Middle Initial			Far Nar	nily ne					Suffix e.g. J		
Inventor's Signature Date																
Resid	ence: (	City			State			Co	ountry				Citizensh	ip		
Post (	Office /	\ddress														
Post 0	Office /	\ddress														
City				State		Zip			Cour	ntry			Applicar Authorit	nt y		
	Addi	tional inve	ntors are being	g named	on supple	ement	tal shee	t(s) a	ttache	d her	eto					

Express Mail" mailing label numbe Type a plus sign (+) inside this be		Patent and Tradema	Approved for use the	PTO/SB/01 (i hrough: 10/31/98 OMB 0651- PARTMENT OF COMMERCE
0010/PTO Rev. 6/95	U.S Department of Commerce Patent and Trademark Office	Attorney Docket	H 4086 PC1	r/us
DECLARAT	ION FOR	First Named Inventor	KROPF, CI	hristian
UTILITY OF		COI	MPLETE IF KN	IOWN
PATENT API		Application Number		
ALEMIA	2.071	Filing Date		
Declaration OF	R X Declaration Submitted after	Group Art Unit		
Submitted with Initial Filing	Initial Filing	Examiner Name		
of the subject matter which is claimed COMPOSITE MATER CONSTITUENTS	RIALS COMPRISED OF		NDS AND PRO	OTEIN
the specification of which is attached hereto	(ride of a	are invention,		
OR  x was filed on (MM/DD/YYYY	6/23/2000	as United	States Application No	umber or PCT International
Application Number PCT/EP00/	05813 and was am	nended on (MM/DD/YYYY)		(if applicable).
I hereby state that I have reviewed ar amendment specifically referred to al		bove identified specification, in	cluding the claims, as	s amended by any
I acknowledge the duty to disclose in		ntability as defined in Title 37 C	ode of Federal Regul	ations, ∍ 1.56.
I hereby claim foreign priority benefits certificate, or 3365(a) of any PCT Inte and have also identified below, by chaving a filing date before that of the	s under Title 35, United States Code emational application which designa ecking the box, any foreign applicat application on which priority is clain	e ±119(a)-(d) or ±365(b) of any ated at least one country other tion for patent or inventor's cert ned.	foreign application(s) than the United State ificate, or of any PCT	for patent or inventor's s of America, listed below International application
Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO
199 30 335.5	Germany	7/2/1999		X X
Additional foreign application n	umbers are listed on a supplementa	al priority sheet attached hereto	•	
I hereby claim the benefit under Title	T	any United States provisional a	application(s) listed be Additional provisiona	
Application Number(s)	Filing Date (MM/DD/YYYY)		application numbers are listed on a supplemental priority sheet attached heret	,

Type a plus sign (+) inside this box →

H.4	4086	PCT	7US

## **DECLARATION**

Page 2

I hereby claim the benefit under Title 35, United States Code \$120 of any United States application(s), or \$365© of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code \$112.1 acknowledge the duty to

disclose information date of the price	usclose information which is material to patentability as defined in Title 37, Code of Federal Regulations 31.56 which became available between the filing late of the prior application and the national or PCT international filing date of this application.  U.S. Parent  PCT Parent  Parent Filing Date  Parent Patent Number  (MM/PD00000)														
U.S Applicat				T Parei lumber					iling Da		Pa	rent Pat			oer
			PCT/EF	200/058	13		6/23/2	000	)			<u> </u>			······································
Additiona	al U.S. or Po	CT internationa	l applicatio	n numbers	are listed	on a s	suppleme	ntal	priority she	et at	tached here	to.			
As a named in Trademark Of	ventor, I her ice connect	reby appoint the ted therewith:	e following	attorney(s)	and/or a	gent(s)	to prose	cute	this applica	ation	and to trans	act all busir	ess is	n the Pate	ent and
Firm Nar	ne								Customer Number	0	r label				
OR X List Attor	ney(s) and/	or agent(s) nan	ne and regi	stration nui	mber bel	ow:									
	Nam	e		Regist Num	ration ber				N	ame				Regista Num	ration ber
Wayne C. Glenn E.				21,06 33,53			imberl		. Hild Baumar	_				39,22	
Stephen D				33,24		"	leven	U. 1	Baumai	1			İ	33,83	2
				<u> </u>											
Additiona	I attorney(s)	) and/or agent(s	s) named o	n a suppler	mental sh	neet att	ached he	reto.							
Please direct a to:	il correspor	ndence X	Customer Number	r or la	bel		004	123			OR [	X Fill in o	corres s bek	pondence	e .
Name	Glen	n E. J. Murp	hy												
Address		cel Corporat													
Address		Renaissan	ce Blvd,	Suite 20	0										
City	<del></del>	h Mills				Stat		P	٩			Zip		19406	
Country	USA		Telepho		Щ.	278-4				Fa		610-27			28 3 es - C 2 - A
willful false	and belle statemer he United	at all statem ef are believ nts and the d States Co d thereon.	ved to be like so m	e true; an	id turth nunish	er tha	at these by fine	sta or i	atements	mer	ere made nt. or both	with the k	COOW	rledge t	hat 1 of
Name of S	Sole or I	First Inver	itor:					l	A pe	etitior	n has been fi	iled for this :	ınsigr	ned inven	tor
Given Name	Christi	ian		Middle Initial			Family Name		KROPF	•			Suf e.g	fix . Jr.	
Inventor's Signature Date															
Residence: City Duesseldorf State Country Germ												Citizensh	nip	Germa	any
Post Office A	ddress	Caecilienst	rasse 4												
Post Office A	ddress														
City 4059	7 Duessel	ldorf	State		Zip		Co	untr	y Ger	man	у	Applica Authorit	nt y		
X Addit	ional inver	ntors are bein	g named	on supple	mental	sheet(	(s) attacl	hed	hereto						
										-			*		

Type a plus sign (+) inside this box →

H 4086 PCT/US

		D	ECLAR	ATIO	NC							ADDIT Su	IONAL ppleme	INVENT	OR( et	S)	
Nam	e of	Additio	nal Joint Ir	nvento	r, if an	y:					A p	petition hentor	as been	filed for th	nis uı	nsigned	
Given Name		Marce	el _		Middle Initial				Far Na	mily me	R	ОТН				uffix g. Jr.	
Invent Signa			Marel 7										Date	2.1	. 20	» (	<u> </u>
Resid	ence: (	City Du	esseldorf		State	∍ ]		_	C	ountry	G	ermany		Citizens	ship	Germ	anv
Post 0	Office A	\ddress	Am Nettch	esfeld 2	1												
Post 0	Office A	Address															
City	4058	9 Duess	eldorf	State		Z	ip			Cou	ntry	Germa	ıy	Applica Author	ant ity		
Nam	e of	Additio	nal Joint Ir	vento	r, if any	y:					A p	etition ha	as been 1	filed for th	is ur	nsigned	
Given Name		Ulrike			Middle Initial				Fan Nar		BF	RUENIN	GHAUS	3		iffix g. Jr.	
Invent Signat							) ever					Date					
	ence: (		nheim		State				Co	ountry	G	ermany		Citizens	hip	Germ	any
Post C	Office A	ddress	An der Dort	6													
		ddress	<u> </u>	т	.,	_											
City	4078	9 Monhei	im 	State		Zi	Р			Cour	ntry	German	у	Applica Authori	int ty		
Nam	e of A	Additio	nal Joint In	vento	r, if any	<b>/:</b>					A po	etition ha	s been fi	iled for thi	s un	signed	
Given Name		Stefan			Middle Initial				Fam		ML	JELLNE	R		Suf e.g.		
Invento Signat													Date				
Reside	ence: C	ity Lar	ngenfeld		State	T			Со	untry	Ge	rmany		Citizensh	ip	Germa	inv
Post O	ffice A	ddress	Hagebutten	weg 21			_							1			
Post O	ffice A	ddress															
City		Langen		State		Ziţ	)			Coun	try	Germany	1	Applica: Authorit	nt y		
Name	of A	ddition	nal Joint in	ventor	, if any:	:				] i	A pe	etition has	s been fil	ed for this	s uns	signed	
Given Name	Given Name Albrecht Middle Initial								Fami Nam	ily e	WE	ISS			Suff e.g.		
Invento Signatu													Date				
Reside		<del>-  </del>	genfeld		State		-		Cou	intry	Ge	rmany		Citizensh	р	Germa	ny
Post Of			Forellenweg	37													
Post Of																	
City	40764	Langenf	eld		Zip				Count	ry	Germany		Applican Authority	t			
x	Additio	nal inven	tors are being	named	on supple	men	ıtal	sheet(s	s) atta	ached	here	to			-		

DEX

			DE	CLAR	ATIO	N								IVENTOI			
Name	e of A	Addi	tion	al Joint in	ventor	, if any:				i	A pe	etition ha	ıs been fil	ed for this	unsi	gned	
Given Name		Ha	ns			Middle Initial			Famil Name		DO	LHAIN	E		Suffix e.g. J		
Invento Signat			4	aus	Xn	Ma		•	ŗ				Date	07.0	7.2	200	2
	ence: (	City	Gle			State	T		Cou	intry	Ge	rmany		Citizenshi	$-\tau$	Germa	
Post C	Office A	ddre	ss	Bendgasse	20						<u> </u>				<u> </u>		
Post C	Office A	ddre	ss												•		
City	4135	2 Gle	hn		State		Zip			Coun	itry	German	ıy	Applicar Authority	nt y		
Nam	e of	Addi	ition	al Joint In	ventor	, if any					A pe	etition ha	as been fi	led for this	unsi	gned	
Given Name						Middle Initial	T		Fami Name				-		Suffix e.g. J		
Invent Signat	tor's												Date				
	ence:	City				State	Т		Cou	untry	1		·	Citizensh	ip		-
	Office /		ss								•						
Post C	Office /	Addre	ss														
City					State		Zip			Cour	ntry	1100001		Applicar Authority	nt V		
Nam	e of	Add	itior	nal Joint Ir	rventor	, if any	:				A po	etition ha	as been fi	led for this		gned	
Given Name						Middle Initial	┪		Fami Nam	ily e				·	Suffix e.g. J		
Invent	tor's								L		L		Date				
	lence:	City				State	Τ		Cou	untry	T		I	Citizensh	ip		
Post 0	Office	Addre	ss		·		•										
Post (	Office .	Addre	ss														
City					State		Zip			Cour	ntry			Applicar Authorit			
Nam	ne of	Add	itio	nal Joint li	nvento	r, if any	:	···· -			A po	etition ha	as been fi	led for this	unsi	gned	
Given Name						Middle Initial			Fami Nam	ily e					Suffix e.g.	K Jr.	
Inven Signa													Date				
Resid	lence:	City				State			Cou	untry				Citizensh	ip		
Post (	Office .	Addre	ss														
Post (	Office .	Addre	ss	<u> </u>		T		1							7.1		
City	1				State		Zip		- 1	Cour	ntrv l			Applicar Authorit	it [		

		ا	DECLAR	ATIC	ON						ONAL II			S)	
lam	e of	Addit	ional Joint I	nvento	r, if any	<b>':</b>			A r	petition ha	as been fi	led for th	is ur	nsigne	d
iven lame		Pete	er		Middle Initial		F	amily ame	w	UELKNI	TZ			iffix g. Jr.	
nvent lignat							***************************************			<del></del>	Date	1			
esid	ence: (	City	Leichlingen		State			Country	/ G	ermany		Citizens	hip	Gerr	many
ost C	Office A	Addres	s Im Erlengr	und 9					•			<u> </u>		<u> </u>	
ost C	Office A	Addres	s												
City	4279	9 Leic	hlingen	State		Zip		Cou	untry	Germar	ıy	Applica Author			
Nam	e of	Addit	ional Joint li	nvento	r, if any	•			A p	etition ha	as been fi	led for th	is un	signe	d
Given Name		Rue	diger		Middle Initial	T		amily ame	KI	NIEP				ffix 1. Jr.	
nvent Signat	or's ture									-4	Date				
Resid	ence: (	City	Langenfeld		State			Country	G	ermany		Citizens	hip	Gern	nany
ost C	Office A	Address	s Wupperstr	asse 26a	1										
ost C	Office A	Address	S									***			
City 40764 Langenfeld State						Zip	)	Cou	intry	German	ıy	Applica Authori	nt ity		
Nam	e of	Addit	ional Joint Ir	nventoi	r, if any	:			A p	etition ha	ıs been fil	led for thi	is un	signed	i i
Siven Name		Han	S		Middle Initial		Fa Na	amily ame	LA	SKA			Suf e.g	ffix . Jr.	
nvent Signat				,	-						Date				
	ence: (	City	Langenfeld		State	Т	To	Country	G	ermany	<u> </u>	Citizensi	nip	Germ	anv
ost C	Office A	Address	<del></del>	asse 10						· · · · · ·			<u> </u>		
ost C	Office A	ddress	;									<del></del>		<del></del>	
City	4062	7 Lang	jenfeld	State		Zip		Cou	ntry	German	у	Applica Authori	nt ty		
lam	e of A	Additi	ional Joint Ir	ventor	, if any				A p	etition ha	s been fil	ed for thi	s un:	signed	i
Siven Name		Micl	nael		Middle Initial		Fa Na	mily ame	ME	EINDERS	<u> </u>		Suf e.g.		
nvent Signat	or's ure	l	lichael	! n	llei	.0	levs				Date	04.	01	.20	02
Reside	ence: (	City	Krefeld		State	$\prod$	C	ountry	G	ermany		Citizensh	nip	Germ	any
	Office A	ddress	-Am-Eichen	hof 11 -	Am	-	Eicker	hof	11	1					
			.		<del></del>										
ost C	Office A	ddress	<u> </u>												
ost C		ddress Krefe		State		Zip		Cou	ntry	German	y	Applicat Authorit	nt y		

		ı	DECLAF	RATIC	N_					<u> </u>			NVENTO		)	
Name	e of A	Addit	ional Joint I	inventoi	r, if any	:				A p	etition ha	ıs been fi	led for thi	is uns	signed	i 
Given Name		Pete	er	-	Middle Initial			Far Nai	nily me	W	UELKNI	TZ		Suff e.g.	fix Jr.	
Invento Signati	or's				· · · · · ·							Date	7			
	ence: C	city T	Leichlingen	<u></u>	State	Т		Tc	ountry	G	ermany		Citizens	hip	Gern	nanv
	office A			rund 9									1			
	ffice A												1248 - 9			-
City	-		hlingen	State		Ziţ	·		Cour	ntry	German	У	Applica Authori	ent ity		
Nam	e of A	Addit	ional Joint I	Invento	r, if any	:				A p inve	etition ha ntor	s been fi	led for thi	is uns	signed	t
Given Name		Rue	diger		Middle Initial			Far Nai	nily me	KN	NEP			Suff e.g.	fix Jr.	
Invente Signat	or's ure								· + -			Date				
Reside	ence: C	City	Langenfeld		State			C	ountry	G	ermany		Citizensi	hip	Gern	nany
Post C	ffice A	ddres	Wupperst	rasse 26a												
⊃ost C	office A	ddres	\$													
City	4076	4 Lang	jenfeld	State		Zip			Cour	ntry	German	у	Applica Authori			
					<u> </u>	_			<u> </u>					<u> </u>		
Nam	e of A	Addit	ional Joint I	inventoi	r, if any	:				A p inve	etition ha ntor	s been fi	led for thi	s uns	signed	i 
Given Name		Han	S		Middle Initial			Fan Nar	nily ne	LA	SKA	•		Suff e.g.		
Invento Signat			Ucus		41	K	Der	Mark Control				Date	15.0	OL	.0.	2
Reside	ence: C	-	Langenfeld		State			Co	ountry	G	ermany		Citizensl	hip	Germ	any
Post C	ffice A	ddress	Sperberst	rasse 10												
Post C	office A	ddress	<b>3</b>													
City	4062	7 Lang	genfeld	State		Zip			Cour	ntry	German	у	Applica Authori	nt ty		
Nam	e of A	Addit	ional Joint I	nventor	r, if any	:				A p	etition ha ntor	s been fil	ed for thi	s uns	igned	l
Given Name	Mici	Middle Initial			Fan Nar	nily ne	ME	INDER	8		Suff e.g.					
Invento Signat	or's ure											Date				
Reside	ence: C	City			C	ountry	G	ermany		Citizensh	nip	Germ	any			
Post C	ffice A	ddress														
Post C	office A	ddress	3													
City	4780	0 Kref	eld	State		Zip	)		Cour	itry	German	у	Applica Authorif	nt		
City [																

		DE	ECLAR	ATIC	ON							ONAL II			5)	
Name o	of Add	dition	al Joint II	nvento	r, if any	y:				A p	oetition ha	as been fi	led for th	nis ur	nsigne	d
Given Name	P	eter			Middle Initial			F	amily Name	w	UELKN	TZ		Su e.g	ıffix g. Jr.	
Inventor's Signature										. 1		Date		•		
Residenc	e: City	Leid	chlingen	**	State	,			Country	/ G	ermany		Citizens	ship	Geri	nany
Post Offic	ce Addr	ess	lm Erlengr	und 9	•			•								
Post Offic	ce Addr	ess														
City 4:	2799 Le	eichlin	gen	State		Zi	р		Cou	ıntry	German	ту	Applic Autho	ant rity		
Name o	of Ado	dition	al Joint Ir	nvento	r, if any	<b>/</b> :				A p	petition ha	as been fi	led for th	nis ur	nsigne	d
Given Name	R	uedig	jer		Middle Inițial			F	amily lame	KI	NIEP	in.		Su e.g	ffix J. Jr.	
Inventor's Signature			Lind	ges d	me 1							Date	02.)	- <del></del>	2002	-
Residenc	e: City	Lan	genfeld	J	State	•			Country	G	ermany		Citizens	ship	Gern	nany
Post Offic	1															
Post Offic																
City 40		Zi	Р		Cou	intry	German	y	Applic Author	ant rity						
Name o	r, if any	<b>/</b> :				A p	etition ha	s been fi	ed for th	is un	signed	i				
Given Name	На	ans			Middle Initial			F	amily lame	LA	SKA			Sur	ffix . Jr.	
Inventor's Signature										<u>.                                    </u>		Date		0.9	. 01.	<u>.l.,.,.</u>
Residenc	e: City	Lan	genfeld		State				Country	G	ermany	l	Citizens	hip	Germ	any
Post Offic	e Addre	ess	Sperberstra	asse 10						•					•	
Post Offic	e Addre	ess									,					
City 40	0627 La	ingenf	eld		Zij	,		Cou	ntry	German	у	Applica Author	ant ity			
Name c	of Add	lition	al Joint In	vento	r, if any	<b>':</b>				A p inve	etition ha ntor	s been fil	ed for th	is un	signed	
Given Name	M	ichae	;[		Middle Initial			F.	amily ame	ME	EINDER	3		Suf e.g.	fix . Jr.	
Inventor's Signature												Date				
Residenc	e: City	Kref	eld		State				Country	G	ermany		Citizens	hip	Germ	any
Post Office Address Am Eichenhof 11																
Post Offic																
Post Offic	e Addre	ess	<u> </u>	, · · · · · · · · · ·												

			DE	ECLAR	ATIC	N								NVENTO		·) 	
Nam	e of A	Addi	tion	al Joint Ir	vento	r, if any	:				A p inve	etition ha ntor	s been fi	led for thi	is un	signed	
Given Name		Pet	ter			Middle Initial			Fa Na	mily ime	W	UELKNI	TZ		Suf e.g	fix . Jr.	
Invent Signa				Je.		//				_			Date	Jam	new	4 CB H	<sup>2</sup> 1, 201
	ence: (	City	Leid	chlingen		State	Ī			ountry	G	ermany		Citizens		Germ	
Post (	Office A	ddre	ss	lm Erlengri	und 9												
Post (	Office A	ddre	ss														
City	4279	9 Lei	chlin	gen	State		Zip	·		Cou	ntry	German	У	Applica Author	ant ity		
Nam	e of	Addi	ition	nal Joint Ir	vento	r, if any					A p inve	etition ha	s been fi	iled for th	is un	signed	
Given Name		Ru	ediç	ger		Middle Initial	T		Fa Na	mily me	KN	NEP			Suf e.g	fix . Jr.	
Invent Signa	tor's ture												Date				
<u> </u>	ence:	City	Lan	ngenfeld		State	Т		C	ountry	G	ermany		Citizens	hip	Germ	any
Post (	Office A	Addre	ss	Wupperstr	asse 26a		_										
Post Office Address																	
					State		Zip	,		Cou	ntry	German	у	Applica Authori	ant itv		
Name of Additional Joint Inven					vento	r, if any		-			A p	etition ha ntor	s been fi	led for thi		signed	
Given Name		На	ns			Middle Initial	T		Fa Na	mily me	LA	SKA			Suf e.g.		
Inveni Signa							•						Date				
Resid	ence: (	City	Lan	genfeld		State			c	ountry	G	ermany		Citizens	hip	Germ	any
Post (	Office A	Addre	ss	Sperberstr	asse 10												
Post Office Address  City 40627 Langenfeld State					State		Zip	, [	<del></del>	Cour	ntry	German	у	Applica Authori	int		<u> </u>
Name of Additional Joint Invent						r, if any	: ]	<u> </u>			A p	etition ha	s been fi	led for thi		signed	
Given Michael Name						Middle Initial	<b></b>		Fa Na	mily me	ME	EINDER	 S		Suf e.g.		
Inventor's Signature							<b>I</b>						Date				
Resid	lence: (	City	Kre	feld		State			C	ountry	G	ermany		Citizensl	hip	Germ	any
Post (	Office /	Addre	ss	Am Eichen	hof 11												
Post (	Office /				T	<u>.                                    </u>		<del></del>	•	T		· _		<del></del>	- T		
City	ity 47800 Krefeld State Zip									Cour	ntry	German	y	Applica Authori	int		

			DE	ECLAF	RATIO	NC							IONAL II pplemer			S)	
Nai	me of	Addi	tion	al Joint I	nvento	r, if ar	ıy:				] iĥv	petition h entor	as been fi	iled for th	is uı	nsigned	d .
Give Nam		Ulri	ch			Middle Initial	3		F	amily ame	s	CHOER	KEN			uffix g. Jr.	
	entor's nature												Date				_ <b>_</b>
Resi	idence:	City	Leic	hlingen		Sta	te		(	Countr	y (	Germany	· <del>*</del>	Citizens	hip	Germ	nany
Post	t Office	Addres	s	Neustrass	e 12												
Post	t Office	Addres	s		"-"									<del></del>			
City	427	99 Leic	hlin	gen	State		Z	ip		Co	untry	German	ıy	Applica Authori	int ty		
Nan	me of	Addit	ion	al Joint I	nvento	r, if an	y:				A i	petition ha	is been fil	led for thi	s un	signed	
Give Nam		Lot	har			Middle Initial	,		Fa Na	amily ame	K	INTRUP			Sur e.g	ffix . Jr.	
	ntor's nature	<u>l</u>											Date			-	
Resid	idence:	City	Due	sseldorf		Stat	е		C	Country	G	ermany		Citizensh	nip	Germ	any
Post	Office /	Addres	<u> </u>	An der Gar	ather Mo	tte 15											
Post	Office /	Addres	s [													<del></del> -	
City	4059	5 Due	ssel	dorf	State		Zi	р		Cou	ntry	German	у	Applicar Authorit	nt		
Nan	ne of	Addit	iona	al Joint Ir	ventor	, if an	y:				A p	etition ha	s been file			signed	
Giver Name		Burl	cha	rd		Middle Initial			Fai Na	mily me	ES	CHEN			Suff e.g.		
Inven Signa													Date				
	dence: (			seldorf		State			C	ountry	G	ermany		Citizenshi	р	Germa	iny
Post (	Office A	ddress		Doeberitze	r Strasse	18					-				1		
Post (	Office A	ddress															
City		9 Dues			State		Zip	ì		Cour	ntry	Germany	,	Applican Authority	t	·	
Nam	ne of A	Additi	ona	l Joint In	ventor	, if any	<b>/:</b>				A pe	etition has	been file	d for this	uns	igned	
Given Name	•	Ame	rigo			Middle Initial			Fan Nan		PA	STURA			Suffi e.g.		
Invent Signal	ature			. 070	astu	1							Date	January	·, lv	d,lo	ગ
	lence: C		/itte			State	$\perp$		Co	untry	Ge	rmany		Citizenship	<u>,                                    </u>	Germa	ny
	Office A		#	Sauerbruch	strasse 3	Ba											
<b>Post C</b>	Office A	dress															
City	58453 Witten State Zip									Coun							

	sign (+) i	nside this box a	<u> </u>				1		400171	01141 11	W.C.N.T.C			
	D	ECLAR	ATIC	N							NVENTO		>)	
Name of	Additio	onal Joint In	ventor	, if any	:				etition ha	s been fi	led for thi	is un	signe	d
Given Name	Ulric	h		Middle Initial			Family Name	so	CHOERK	EN			ffix J. Jr.	
Inventor's Signature					-		- 111			Date				
Residence:	City L	eichlingen		State			Country	/ G	ermany		Citizens	hip	Gen	nany
Post Office A	Address	Neustrasse	12		-									
Post Office /	Address			-										
City 4279	9 Leich	lingen	State		Zip		Col	intry	German	у	Applica Authori	int ity		
Name of	Additio	onal Joint In	ventoi	r, if any	:			A p	etition ha	s been fi	led for thi	is un	signe	d
Given Name	Loth	ar		Middle Initial			Family Name	KI	NTRUP				ffix J. Jr.	
Inventor's Signature										Date				
Residence:	City D	uesseldorf		State			Country	/ G	ermany		Citizens	hip	Gerr	nany
Post Office	Address	An der Gar	ather Mo	tte 15										
Post Office	Address													
City 4059	95 Dues:	seldorf	State		Zip		Cot	intry	German	у	Applica Authori	int fv		
Name of	Additio	onal Joint In	ventor	, if any	:	1		A p	etition ha	s been fi			signe	đ
Given Name	Burk	hard		Middle Initial			Family Name	ES	SCHEN			Sur e.g	ffix . Jr.	
Inventor's Signature	Bn	hal is					<u></u>	•		Date	. ' 6'6	77	- 11-	2
Residence:	City _D	uesseldorf		State			Country	G	ermany		Citizensi	hip	Gern	nany
Post Office	Address	Doeberitze	r Strasse	18										
Post Office	Address													
City 4059	99 Dues:	seldorf	State		Zip		Cou	intry	German	у	Applica Authori	nt ty		
Name of	Additio	onal Joint In	ventor	, if any	:	<del>.</del>		A p inve	etition ha entor	s been fil	led for thi	s un	signe	i
Given Name	Ame	rigo		Middle Initial			Family Name	PA	STURA			Suf e.g	ffix . Jr.	
Inventor's Signature										Date				
Residence:	City V	/itten		State			Country	G	ermany		Citizensh	nip	Gern	nany
Post Office	Address	Sauerbruch	nstrasse	3a										
		1												
Post Office	Address								¥					

Type a plu	ıs sign	(+) in	side this box	<b>,</b>												
		D	ECLAF	RATIO	ON							TONAL I pplemei			S)	
Name o	f Add	litio	nal Joint I	nvento	r, if an	y:				A p	petition h entor	as been f	iled for th	nis un	signe	d
Given Name	UI	rich			Middle Initial				amily ame	so	CHOER	KEN			ffix ı. Jr.	
Inventor's Signature												Date				
Residence	: City	Lei	ichlingen		State	•			Country	G	ermany	- <del>1</del>	Citizens	hip	Gerr	nany
Post Office	Addr	ess	Neustrass	e 12						•			*			
Post Office	e Addre	ess					<u></u>									
City 42	799 Le	eichlir	ngen	State		Zi <sub>l</sub>	p		Cou	intry	Germa	ny	Applica Author	ant ity		
Name o	f Add	litior	nal Joint I	nvento	r, if any	<b>/</b> :			,	A p	etition h	as been fi	iled for th	is un	signe	d
Given Name	Lo	othai	r 	11	Middle Initial				mily ame	KI	NTRUP			Suf e.g	fix . Jr.	
Inventor's Signature			K p	<u>/</u>								Date	2002	? - 7	1-9	
Residence	: City	Du	esseldorf	2	State	•		С	ountry	G	ermany		Citizens		Gern	
Post Office	Addre	ess	An der Gar	ather Mo	tte 15											
Post Office	Addre	ess														
City 40	595 Dı	iesse	ldorf	State		Zip	·		Cou	ntry	German	ıy	Applica Authori	int ity		
Name of	Add	itior	nal Joint Ir	rventor	r, if any	<b>'</b> :				A poinve	etition ha	as been fil	<del></del>		signed	
Given Name	Вι	ırkha	ard		Middle Initial	T		Fai Na	mily me	ES	CHEN	····		Suff e.g.		
Inventor's Signature												Date				
Residence	City	Due	esseldorf		State			С	ountry	Ge	ermany		Citizensi	nip	Germ	any
Post Office	Addre	ss	Doeberitze	r Strasse	18											
Post Office																
City   405	99 Du	esse	ldorf	State		Zip			Cour	itry	German	у	Applica Authorit	nt v		
Name of	Add	ition	al Joint In	ventor	, if any	: ]	-			A pe	etition ha	s been file			igned	<del></del>
Given Name	An	nerig	jo		Middle Initial	T		Fan Nar	nily ne	PA	STURA			Suffi e.g.		
nventor's Signature												Date				
Residence:	City	Witt	ten		State	$oxed{oxed}$		Co	ountry	Ge	rmany		Citizensh	ip	Germa	any
Post Office			Sauerbruch	strasse	3a											
Post Office Address																· ·
City 584																

Given Name Invent Signat Reside Post C Post C City	or's	Ulr City	ich Lei	chlingen De	18 isselds	Middle Initial	y:		Fa		inve	petition he entor	as been f	iled for thi	s uns	signed	
Name Invent Signat Reside Post C Post C City	or's ture ence: Office A	City Addres	Lei ss	1	Carried Street, Street	Initial			Fa	••	1						
Reside Post C Post C City	ence: ( Office A	\ddre:	ss	1	Carried Street, Street	>				mily me	S	CHOER	KEN		Suff e.g.		Γ
Post C Post C City	Office A	\ddre:	ss	1	Carried States	) A	-		<b>-</b>		•		Date <sub>.</sub>	02.0	1.2	002	
Post C	Office A	\ddre:		Neustrasse		State	,		С	ountry	G	ermany		Citizensh	ip	Germ	an
City			SS		12 F	ascals	4.	16									
	4 <del>279</del> 4059	نه د ۵														-	
Nam	Name of Additional Joint Inventor,									Cou	ntry	Germai	ny	Applica Authorit	nt Y		
	e of A				vento	r, if any	<b>/</b> :				A p	etition ha	as been fi	led for this	s uns	igned	
Given Name		Loi	thai	*		Middle Initial				mily me	KI	NTRUP			Suffi e.g.		
Invento Signat													Date				<u> </u>
	ence: C	City	Due	esseldorf		State	Т		To	ountry	Ta	ermany	1	Citizensh	in T	Germa	
	Office A	,		An der Gara	ather Mo					ountry	10	emany		Citizensii	.p	Germ	an)
Post C				7.11.40.1.04.1								· · · · · · · · · · · · · · · · · · ·				_	
City	4059			ldorf	State	T	Zip	<u>. T</u>		Cou	atry	German	V	Applicar	.	-	_
											y	Cerman	У	Applicar Authority	"		
Name	e of A	Addi	tion	al Joint In	vento	r, if any	<b>'</b> :				A p inve	etition ha	s been fil	ed for this	unsi	igned	_
Given Name		Bu	rkha	ard		Middle Initial	T		Far Nar		ES	CHEN			Suffix e.g. J		_
Invento Signati													Date				
Reside	nce: C	ity	Due	sseldorf		State	T	***	Co	untry	Ge	ermany		Citizenshi	р	Germa	-nv
Post O	ffice A	ddres	s	Doeberitzer	Strasse	18											
Post C	ffice A	ddres	s											<del></del>			_
City	City 40599 Duesseldorf State						Zip			Cour	try	German	у	Applican Authority	t		
Name	Name of Additional Joint Invent						:				A pe	etition ha	s been file	ed for this	unsi	gned	
Given Name	Given Amerigo						T		Fam Nan	nily ne	PA	STURA			Suffix e.g. J		_
Invento Signatu													Date				
Reside	nce: C	ity	Witt	en		State			Со	untry	Ge	rmany		Citizenship	) (	Germa	ny
Post O	ffice A	ddres	s	Sauerbruch	strasse	3a									_		
Post O	ffice A	ddres	s													_	
City	58453	Witt	en		State		Zip		T	Coun	try	Germany	,	Applicant Authority			_

DEX

			ЭE	CLAR	ATIC	N				!				NVENTO		
Nam	e of A	Additi	ona	al Joint In	vento	r, if any	:				A p inve	etition ha	as been f	iled for thi	s unsigi	ned
Given Name		Marc	el			Middle Initial			Fa Na	mily me	RC	OTH			Suffix e.g. Jr.	
Invent Signa							I						Date			L
Resid	ence: (	City [	Due	sseldorf		State	Ţ		C	ountry	G	ermany		Citizens	nip G	ermany
Post (	Office A	\ddress		Am Nettche	sfeld 21	<u> </u>									•	
Post 0	Office A	Address	T													
City	4058	9 Dues	sel	dorf	State		Zip	•		Cou	ntry	German	ıy	Applica Authori	nt ty	
Nam	e of	Additi	on	al Joint In	vento	r, if any	<b>':</b>				A p inve	etition ha	s been f	iled for thi	s unsigi	ned
Given Name		Ulrik	(e			Middle Initial	T		Fa Na	mily me	BF	RUENIN	GHAUS	,	Suffix e.g. Jr.	
Invent Signa									1				Date			
Resid	ence: (	City I	Vlon	heim		State	Т		С	ountry	G	ermany	i	Citizensh	nip G	ermany
Post 0	Office A	\ddress		An der Dorf	strasse	6									•	
Post 0	Post Office Address															
City	4078	9 Monl	nein	1	State		Zip			Cou	ntry	German	ıy	Applica Authorit	nt ty	
Nam	e of	Additi	on	al Joint in	vento	r, if any		•			A poinve	etition ha ntor	ıs been f	iled for this	s unsigr	ned
Given Name		Stefa	an			Middle Initial	Ţ		Fai Na	mily me	MU	JELLNE	R		Suffix e.g. Jr.	
Invent Signa													Date			······································
Resid	ence: (	City I	.ang	genfeld		State			С	ountry	Ge	ermany		Citizensh	ip G	ermany
Post (	Office A	\ddress		Hagebutten	weg 21											
Post 0	Office Address															
City	40764 Langenfeld State Zip									Cour	ntry	German	у	Applica: Authorit		
Nam	lame of Additional Joint Inventor, if any:										A pe	etition ha ntor	s been fi	led for this	s unsigr	ned
Given Name		Albr	ech	it		Middle Initial	T		Far Na	nily me	WE	EISS			Suffix e.g. Jr.	
Invent Signa	tor's ture	la	V (	ral	/ <	)C/	_	>					Date	Jan	2,7	2007
Residence: City Langenfeld State									C	ountry	Ge	rmany		Citizensh	ip Ge	rmany
Post C	Office A	\ddress		Forellenweg	37											
Post C	Office A	\ddress														
City	4076	4 Lang	enfe	eld	State		Zip	·		Cour	itry	German	y	Applicar Authority	nt y	
×	Addit	ional in	veni	tors are being	named	on supple	emer	ntal she	et(s) =	ittache	d here	eto				

		D	ECLAR	ATIC	N							INVENTO		S)		
Nam	ne of	Additio	onal Joint Ir	vento	r, if any	y:				A p	etition h	as been	filed for th	is un	signe	d
Giver Name		Marc	el		Middle Initial			Fa Na	mily ame	R	ОТН	·		Suf e.g	ffix . Jr.	
Inven Signa						<del></del>				•	· · ·	Date			•	<u> </u>
Resid	lence:	City D	uesseldorf		State	,		Ţc	Country	G	ermany		Citizens	hip	Gen	many
Post	Office /	Address	Am Nettch	esfeld 21	1					•						
Post	Office /	Address														
City	4058	9 Duess	eldorf	State		Zip			Cou	ntry	Germa	ny	Applica Author	ant ity		· · · · · · · · · · · · · · · · · · ·
Nam	e of	Additio	nal Joint Ir	vento	r, if any	/:				A p	etition ha	as been t	filed for th	is un:	signe	d
Given Name		Ulrike	)		Middle Initial	Ī		Fa: Na	mily	BF	RUENIN	GHAUS	3	Suf e.g.		
Inven Signa												Date		13		<u> </u>
Resid	ence:	City M	onheim	С	ountry	G	ermany		Citizens	hip	Gern	nany				
Post (	Office /	Address	An der Dor	fstrasse	6	— <del>I</del>				<del>-</del>			<b>-1</b> ,-	·		
Post 0	Office /	Address														
City	4078	9 Monhe	eim	State		Zip			Cou	ntry	German	ny	Applica Authori	int ty		
Nam	e of	Additio	nal Joint In	vento	r, if any	<b>'</b> :				A po	etition ha	as been f	iled for thi		signed	1
Given Name		Stefa	n		Middle Initial	7	<u>-</u>	Far Na	mily me	ML	JELLNE	R	72.00	Suff e.g.		T
Invent Signa		Xa	lan I	ville	18-			<u> </u>				Date	01-0	<u>_</u>		2
Resid	ence: (	City La	ngenfeld		State			Co	ountry	Ge	rmany		Citizensh		Germ	
Post 0	Office A	ddress	Hagebutter	weg 21				<u> </u>		<u> </u>			1	<u>·                                     </u>		
Post 0	Office A	ddress							***	-						
City	4076	4 Lange	nfeld	State		Zip			Cour	itry	German	у	Applica Authorit	nt y	-	
Nam	e of /	Additio	nal Joint In	ventor	, if any					A pe	etition ha ntor	s been fi	led for this	s uns	igned	
Given Name		Albrecht Middle Initial							nily ne	WE	iss			Suffi e.g.		
Invent Signat												Date				
Reside	ence: C	e: City Langenfeld State								Ge	rmany		Citizensh	ip	Germ	any
Post C	Office A	e Address Forellenweg 37										1111				
Post C	office A	ddress														
City	4076	4 Langer	nfeld	State		Zip			Coun	try	Germany	/	Applican Authority	nt /		
×	Addit	onal inve	entors are being	named	on supple	ement	al shee	t(s) at	ttached	here	eto		•			

) 	-00	
	uaža	
	19	
	1 1	
	ini.	
	ij	

		DI	ECLAR	ATIC	N				ADDITIONAL INVENTOR(S) Supplemental Sheet								
Nam	e of	Additior	nal Joint In	vento	r, if any	<b>:</b>			A petition has been filed for this unsignative inventor				signed	i			
Given Name		Marce	l		Middle Initial			Far Na	mily me	R	OTH			Suf e.g.			
Inveni Signa									,			Date					
Resid	ence: (	City Du	esseldorf		State	$\perp$		C	ountry	G	ermany		Citizensl	hip	Gern	nany	
Post 0	Office A	Address	Am Nettche	sfeld 2°	1												]
Post (	Office A	Address			_		_										_
City	4058	9 Duesse	ldorf	State		Zip	)		Cou	ntry	German	У	Applica Authori	int ty			
Nam	e of	Additio	7.	-				etition ha entor	s been fil	led for thi	is un:	signed	i				
Given	Name Initial Name e.g. Jr.														1		
Inven Signa		ME	ec	58 C	ĺ.	IJ	-		Date	03.	O1, 20		202	1			
Resid	lence:		nheim		State	0	<del>/</del>	ountry	G	ermany		Citizensi		Gern		DEX	
Post (	Office A	Address	An der Dorf	strasse	6						<u></u>						_
	_	Address		<u> </u>	Т										<u></u>		_
City	4078	9 Monhei	m 	State		Zip	·		Cou	ntry	German	y	Applica Authori	nt ty			
Nam	e of	Additior	nal Joint In	vento	r, if any	:				A p	etition ha	s been fil	ed for thi	s un:	signed	i	
Given Name		Stefan			Middle Initial			Far Nar	nily me	М	JELLNE	R		Suf e.g.			1
Inven Signa										•		Date			<del></del>	•	
Resid	ence: (	City Lar	ngenfeld		State			C	ountry	G	ermany		Citizensh	nip	Germ	nany	
Post (	Office A	∖ddress	Hagebutten	weg 21									_				
		\ddress				,											
City	4076	4 Langen	feld	State		Zip			Cou	ntry	Germany	<b>/</b>	Applica Authorit	nt y			
Nam	e of	Addition	nal Joint In	vento	r, if any	:				A p inve	etition has	s been fil	ed for this	s uns	signed		
Given Name		Albrec	ht		Middle Initial	$\int$		Fan Nar		W	EISS			Suff e.g.	fix Jr.		
Invent Signa	tor's ture										Date				-		
Residence: City Langenfeld State Country Germany Citizenship Germany												1					
Post 0	Office A	\ddress	Forellenweg	37													
Post 0	Office A	\ddress															]
City	4076	4 Langen	feld	State		Zip			Cour	ntry	Germany	'	Applicar Authorit	nt y			
×	Addit	tional inve	ntors are being	named	on supple	emen	ital sheeti	(s) a	ttache	d her	eto						

Туре	a plus	sign	(+) in	side this box -	<b>→</b>													
			D	ECLAR	ATIC	N				ADDITIONAL INVENTOR(S) Supplemental Sheet								
Nan	ne of	Add	itio	nal Joint Ir	rvento	r, if any	y:				A p inve	etition ha	as been fi	led for thi	is un	signed	l	
Give Nam		Ui	rich			Middle Initial			Famil Name		sc	HOER	KEN			ffix ı. Jr.		
Inver Signa	itor's									•			Date					
Resid	dence:	City	Lei	chlingen		State	,		Cou	ntry	Ge	ermany	<u> </u>	Citizensi	hip	Germ	any	
Post	Office .	Addre	ess	Neustrasse	12						•					•		
Post	Office .	Addre	ess		-													
City	4279	99 Le	ichlir	ngen	State		Zip	•	(	Coun	try	German	ny	Applica Authori	int ty			
Nan	ne of	Add	itioı	nal Joint In	vento	r, if any	<b>/</b> :		A petition has been filed for this unsignment or					signed	-			
Give Name		thai		į	Middle Initial			Family Name	Family Name KINTRUP					Suf e.g	ffix . Jr.			
Inver Signa				1				(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		Date							<u></u>	
Resid	sidence: City Duesseldorf State										Ge	rmany		Citizensh	nip	Germ	any	
Post	Post Office Address An der Garather Motte 15																**	
Post	Office /	Addre	ss															
City	4059	95 Du	esse	ldorf	State		Zip	)		Count	ry	German	у	Applica Authorit	nt			
Nan	ne of	Add	ition	al Joint In	ventor	, if any	<u>'</u> :			i	A pe	etition ha	s been fil			signed		
Giver Name		Bu	rkha	ard		Middle Initial			Family Name	Family Name ESCHEN Suffix e.g. Jr.								
Inven Signa													Date					
Resid	ence: (	City	Due	esseldorf		State			Coun	itry	Ge	rmany		Citizensh	ip	Germa	any	
Post (	Office A	Addre	ss	Doeberitzer	Strasse	18												
Post	Office A	Addre	ss															
City	4059	9 Du	essel	dorf	State		Zip		С	ounti	у	Germany	<i></i>	Applicar Authority	nt /			
Nam	e of	Addi	ition	al Joint In	ventor	, if any	:			] /	A pe	tition has	s been file	ed for this	uns	igned		
Given Name		Am	erig	jo		Middle Initial			Family Name		PAS	STURA			Suff e.g.			
Inven Signa													Date			t		
Resid	ence: (	City	Witt	en		State			Count	try	Ger	many		Citizenshi	р	Germa	ny	
Post 0	Office A	ddre	ss	Sauerbruch	strasse	3a						., .		:-			$\neg \neg$	
Post 0	Office A	ddre	ss									·						
City	5845	3 Wit	ten		State		Zip		Co	ountr	у	Germany		Applican Authority	t			
×	Addit	ional	inven	tors are being	named	on sunnie	meni	tal sheet/	'e) attac	hed i	heref	-		-				

Type a plus sign (+) inside this box → ADDITIONAL INVENTOR(S) DECLARATION **Supplemental Sheet** Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Suffix e.g. Jr. Given Name Middle Family **WUELKNITZ** Peter Name Inventor's Signature Date Residence: City State Leichlingen Country Germany Citizenship Germany Post Office Address Im Erlengrund 9 Post Office Address Applicant Authority 42799 Leichlingen State Zip Country City Germany Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Middle Initial Given Name Ruediger Family **KNIEP** Suffix Name e.g. Jr. Inventor's Signature Date إيرا Residence: City State Langenfeld Country Germany Citizenship Germany Post Office Address Wupperstrasse 26a Post Office Address City 40764 Langenfeld State Zip Applicant Authority Country Germany Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given Name Hans Middle Family Name LASKA Suffix Initial e.g. Jr. Inventor's Signature Date Residence: City Langenfeld State Country Germany Citizenship Germany Post Office Address Sperberstrasse 10 Post Office Address City 40627 Langenfeld State Zip Country Applicant Authority Germany Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Middle Given **Michael** Suffix e.g. Jr. Family **MEINDERS** Name Name Inventor's Signature Date Residence: City Krefeld State Country Germany Citizenship Germany Post Office Address **Am Eichenhof 11** Post Office Address City 47800 Krefeld State Zip Country Germany Applicant Authority Additional inventors are being named on supplemental sheet(s) attached hereto

sign (+) inside this box >

5

	DECLARATION										ADDITIONAL INVENTOR(S) Supplemental Sheet							
Name	of A	Addition	al Joint Inv	/entor	, if any:					A pe inve	etition has	s been file	ed for this	s uns	igned			
Given Name		Hans			Middle Initial			Fan Nan		DC	LHAINE	<b>:</b>		Suff e.g.				
Invento Signatu									**			Date						
Reside	nce: C	city Glei	hn		State	Ţ		Co	untry	Ge	ermany		Citizensh	ip	Germ	any		
Post Of	fice A	ddress	Bendgasse:	20	<u> </u>					•		•						
Post Of	fice A	ddress										* .						
City	4135	2 Glehn		State		Zip			Cour	ntry	German	у	Applica Authorit	nt ty				
Name	of /	Addition	al Joint In	ventor	, if any					A p inve	etition ha ntor	s been file	ed for thi	s un:	signed			
Given Name					Middle Initial			Fan Nar						Suf e.g.				
Invento Signatu												Date						
Reside	nce: (	City			State			Cd	ountry				Citizensl	nip				
Post O	ffice /	Address																
Post O	ffice /	Address							-									
City				State		Zip		٠	Cour	ntry			Applica Authori	nt ty				
Name	e of	Additior	nal Joint In	vento	r, if any	:					etition ha entor	s been fil	ed for thi	s un:	signed			
Given Name					Middle Initial			Fan Nar						Suf e.g.				
Invento Signati	or's ure					_						Date						
Reside	nce:	City			State			Co	ountry				Citizensi	nip				
Post O	ffice /	Address											-	····				
Post O	ffice	Address			1	_			<u> </u>		T		T					
City				State		Zip			Cou	ntry			Applica Authori					
Name	e of	Additio	nal Joint In	vento	r, if any	:				A p	etition ha	is been fil	ed for thi	s un	signed			
Given Name					Middle Initial			Far Na	nily me					Suf e.g.				
Invento Signat								Date										
Residence: City State Country Citizenship																		
Post C	ffice .	Address														-		
Post C	office .	Address																
City				State		Zip	ļ		Cou	ntry			Applica Authori	nt ty				
	Additional inventors are being named on supplemental sheet										reto							

#4

******	mi
:	202
:	
:	200 200
	T,
:	===
:	Ξ
:	====
:	2
:	ane
:	j.
:	200
	The state of the s

Express Mail" mailing label num	ber			Approved for use to	hrough: 10/3	PTO/SB/01 (6 1/98 OMB 0651-0			
Type a plus sign (+) inside this	box +	Р	atent and Tradem	ark Office; U.S. DE	PARTMENT	OF COMMERCE			
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office	Attor	ney Docket ber	H 4086 PC	r/us				
DECLARA	TION FOR		Named	KROPF, C	KROPF, Christian				
	R DESIGN		co	MPLETE IF KN	IOWN				
	PPLICATION	Appl	ication Numbe	r					
FAILNIA	LICATION	Filing	g Date						
	OR X Declaration	Grou	ıp Art Unit						
Submitted with Initial Filing	Submitted after Initial Filing	Exar	miner Name						
the specification of which is attached hereto OR X was filed on (MM/DD/Y) Application Number PCT/EPO	(YY) 6/23/2000	nended o		d States Application N		International applicable).			
amendment specifically referred to I acknowledge the duty to disclose	i and understand the contents of the all pabove. Information which is material to pater sefits under Title 35, United States Code International application which designs checking the box, any foreign application on which priority is clair the application on which priority is clair	ntability a	s defined in Title 37	Code of Federal Regu	lations, ∍ 1.56.				
and have also identified below, by having a filing date before that of the second seco		1							
Prior Foreign Application Number(s)	Country	Fc (	oreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	YES	opy Attached? NO			
199 30 335.5			X						
	n numbers are listed on a supplementa		<u> </u>						
	itle 35, United States Code ∋119(e) of		ed States provisional	rovisional application(s) listed below.  Additional provisional					
Application Number(s)	Filing Date (MM/DD/YYYY)			γ to.					

Type a	plus	sign (+)	inside t	his	box 4	
				_		

IJ

---

ıI.

City

H 4086 PCT/US

DECLARATION Page 2 I hereby claim the benefit under Title 35, United States Code 3120 of any United States application(s), or 3365® of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code 3112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations 31.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application. **U.S. Parent PCT Parent** Parent Filing Date Parent Patent Number **Application Number** Number (MM/DD/YYYY) (if applicable) PCT/EP00/05813 6/23/2000 Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto. As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Customer or label Firm Name Number OR Х List Attorney(s) and/or agent(s) name and registration number below: Name Registration Number Name Registration Number Wayne C. Jaeschke 21,062 Kimberly R. Hild 39,224 Glenn E. J. Murphy 33,539 Steven C. Bauman 33,832 Stephen D. Harper 33,243 Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto. Please direct all correspondence to: Customer Number 00423 OR or label X Fill in correspondence address below Name Glenn E. J. Murphy Address Henkel Corporation Address 2500 Renaissance Blvd, Suite 200 City Gulph Mills State PA Zip 19406 Country USA Telephone 610-278-4926 Fax 610-278-6548 I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. Name of Sole or First Inventor: A petition has been filed for this unsigned inventor Given Name Christian Middle Family Name **KROPF** Suffix e.g. Jr. Inventor's Date Signature Residence: City Duesseldorf State Country Germany Citizenship Germany Post Office Address Caecilienstrasse 4 Post Office Address

Type a plus sign (+) inside this box -

40597 Duesseldorf

State

Additional inventors are being named on supplemental sheet(s) attached hereto

Zip

Country

Germany

H 4086 PCT/US

Applicant Authority

Type a plus sign (+) inside this box → ADDITIONAL INVENTOR(S) DECLARATION Supplemental Sheet Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given Name Peter Middle Family Name WUELKNITZ Suffix Initial e.g. Jr. Inventor's Signature Date Residence: City Leichlingen State Country Germany Citizenship Germany Post Office Address Im Erlengrund 9 Post Office Address City Zip 42799 Leichlingen State Country Germany Applicant Authority Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given Name Ruediger Middle Suffix e.g. Jr. Family **KNIEP** Initial Inventor's Signature Date Residence: City Langenfeld State Country Germany Citizenship Germany Post Office Address Wupperstrasse 26a Post Office Address m City 40764 Langenfeld State Zip Country Germany Applicant Authority Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned Given Name Hans Middle Initial Family Name **LASKA** Suffix e.g. Jr. Inventor's Signature Date Residence: City Langenfeld State Country Germany Citizenship Germany Post Office Address Sperberstrasse 10 Post Office Address 40627 Langenfeld State Zip Country Germany Applicant Authority Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given **Michael** Middle Family Name **MEINDERS** Suffix Name Initial e.g. Jr. Inventor's Date Signature Residence: City Krefeld State Country Germany Citizenship Germany Post Office Address **Am Eichenhof 11** Post Office Address City 47800 Krefeld State Zip Country Germany Applicant Authority Additional inventors are being named on supplemental sheet(s) attached hereto

sign (+) inside this box >

::

	DI	ECLAR	ATIC		ADDITIONAL INVENTOR(S) Supplemental Sheet											
Name of	Add	ditior	nal Joint In	vento	r, if any	<b>/</b> :				A p	etition ha	s been fil	ed for thi	s un:	signed	
Given Name	Н	ans			Middle Initial	T		Fa Na	mily ame	DO	OLHAINE			Suf e.g.		
Inventor's Signature							•					Date				
Residence:	City	Gle	hn		State			С	Country	G	ermany		Citizensh	qir	Germa	any
Post Office	Addr	ess	Bendgasse	20		······································					-		·			
Post Office	Addr	ess														
City 413	52 G	lehn		State		Zip			Cour	ntry	Germany	,	Applica Authorit	nt y		
Name of	Add	lition	nal Joint In	vento	r, if any	<b>/</b> :		A petition has been filed for this unsig						signed		
Given Name					Middle Initial			Fa Na	mily ime					Suff e.g.		
Inventor's Signature												Date				
Residence:	City				State			С	ountry				Citizensh	ip		
Post Office	Addr	ess			-							-				
Post Office	Addr	ess														
City				State		Zip			Coun	try			Applicar Authority	nt /		
Name of	Add	lition	al Joint In	ventor	, if any	:				A p	etition has ntor	been file	ed for this	uns	igned	
Given Name					Middle Initial			Far Na	mily me					Suffi e.g.		
Inventor's Signature												Date				
Residence:	City				State			C	ountry				Citizenshi	р		
Post Office /	Addre	ess														
Post Office /	Addre	ess														
City				State		Zip			Coun	try			Applican Authority			
Name of	Add	ition	al Joint In	ventor	, if any	:			j	A pe	etition has ntor	been file	d for this	unsi	gned	
Given Name					Middle Initial			Fan Nan	nily ne					Suffix e.g		
Inventor's Signature									-			Date			<b>-</b>	
Residence: (	City				State			Co	ountry				Citizenship	T		
Post Office A	ddre	ss														
Post Office A	ddre	ss														
City				State		Zip			Count	гу			Applicant Authority			
Addit	ional	inven	tors are being	named	on supple	ement	al sheet(s	s) at	ttached	here	eto					

ingelle.
1
1
æ
]essile
ı,
1

Express Mail" mailing label num	nber					PTO/SB/01
Type a plus sign (+) inside this	box →		Patent and Tradema	through: 1 EPARTME	0/31/98 OMB 0651	
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office		orney Docket	H 4086 PC	T/US	
DECLARA	TION FOR	-	t Named entor	KROPF, (	Christian	
UTILITY O	R DESIGN		CON	IPLETE IF K	NOWN	
PATENT AP	PLICATION	App	lication Number			
		Filin	ig Date			
Declaration C	DR Declaration Submitted after	Gro	up Art Unit		1.2".	
with Initial Filing	Initial Filing	Exa	miner Name			
of the subject matter which is clain	sole inventor (if only one name is listed and for which a patent is sought of RIALS COMPRISED OF	on the in	evention entitled:			
the specification of which is attached hereto  OR  X was filed on (MM/DD/YY)  Application Number PCT/EP00	0/23/2000	ended o	as United S	tates Application N		CT International (if applicable).
amendment specifically referred to a	and understand the contents of the ababove.  Information which is material to patent ts under Title 35, United States Code ternational application which designat necking the box, any foreign application te application on which priority is claim	tability as	s defined in Title 37 Coo	le of Federal Regu	lations, ∍ 1.5	6.
naving a filing date before that of the Prior Foreign Application						
Number(s)	Country	F01 (1	reign Filing Date MM/DD/YYYY)	Priority Not Claimed	Certified YES	Copy Attached? NO
199 30 335.5	Germany	7/2/1	999			X
Additional foreign application n	umbers are listed on a supplemental	priority s	heet attached hereto:	···		
hereby claim the benefit under Title	35, United States Code ∍119(e) of a	ny United	d States provisional app	lication(s) listed be	low.	
Application Number(s)	Filing Date (MM/DD/YYYY)		ap are su	ditional provisional plication numbers a listed on a pplemental priority eet attached hereto		

Type a plus sign (+) inside this box	X <b>→</b>
DECLA	RATION
I hereby claim the benefit under Title 35 designating the United Sates of Americ United States or PCT international appl disclose information which is material to date of the prior application and the nat	a listed helow an
U.S. Parent Application Number	PCT P Num
	PCT/EP00

H 4086 PCT/US

## Page 2

. United States Code ∍120 of any United States application(s), or ∍365© of any PCT inter

designating the United States or disclose information date of the prior	United Sa PCT inte- ation which application	tes of America rnational applic n is material to on and the nation	, listed below ation in the patentability anal or PCT	w and, ins manner r y as defin internation	ofar as the provided the control of	by the date o	iject matter of first paragra code of Fede of this applica	of each of Ti ph of Ti ral Reg ation.	of the claim itle 35, Un ulations e	ms of this ap ited States C 1.56 which be	plication is not di ode ∍112.1 ackn ecame available	il application sclosed in the prior lowledge the duty to between the filing		
	<b>Parent</b>	t	PC.	T Pare lumber	ent		Parent (MM/I	Filing	g Date		arent Paten (if applic	t Number		
			PCT/EP	<sup>2</sup> 00/058	313		6/23/20	00			•			
		CT internationa												
As a named inve	entor, I her e connect	reby appoint the led therewith:	e following a	attorney(s)	) and/or a	agent(s	s) to prosecu	ite this a	application	and to trans	sact all business	in the Patent and		
Firm Name	,							Custo Numb		or label				
X List Attorne	Name													
Wayne C. Jaeschke 21,062 Kimberly R. Hild 39,224														
Glenn E. J. Murphy Stephen D. Harper  33,539 33,243  Steven C. Bauman 33,83														
Additional a	attorney(s)	) and/or agent(s	s) named or	ı a supple	mental sh	heet at	ttached here	to.						
Please direct all to:	correspon	dence X	Customer Number	or la	label		0042	:3		OR [	Fill in corres	spondence ow		
Name		n E. J. Murp												
Address		cel Corporat												
Address		Renaissan	ce Blvd, S	Suite 20	סכ									
City	<del></del>	h Mills	<del></del>		لِــــ	Stat		PA			Zip	19406		
Country	USA		Telepho			-278-4			Fa		610-278-65			
I hereby decinformation a willful false st Title 18 of the or any patent	e United t issued	d States Cool thereon.	de and th	e hereii true; ar ade are iat such	n of my id furthe punish willful	own er tha nable false	knowled at these s by fine or statemer	ge are tatem r impri nts ma	e true ar ients we isonmei ay jeopa	nd that all ere made on nt, or both rdize the	statements n with the know , under Secti validity of the	nade on dedge that on 1001 of application		
Name of So										n has been fi	led for this unsign	ned inventor		
Name	Christia ———	an		Middle Initial			Family Name	KRO	OPF		Sut e.g	ffix . Jr.		
Inventor's Signature	<del></del>									Date				
Residence: City	<del></del>	esseldorf		State			Country	Ger	many		Citizenship	Germany		
Post Office Address Caecillenstrasse 4														
	Post Office Address													
	Duesseld	iorf	State		Zip		Coun	itry	German	у	Applicant Authority			
X Addition	nal inven	itors are being	g named o	n supple	mental :	sheet(	(s) attache	d heret	to					

Type a plus sign (+) inside this box →

H 4086 PCT/US

Туре	a plus	sign (+	) inside this box	<u>→   </u>	<u> </u>											
			DECLAF	RATIO	NC								NVENTO		i)	
Nam	e of	Addit	ional Joint I	nvento	r, if an	y:				A r	petition ha	as been f	iled for th	is un	signed	
Given Name		Ulri	ch		Middle Initial				amily ame	S	CHOER	KEN		Suf e.g.		
Invent Signa												Date				<u> </u>
Resid	ence: (	City	Leichlingen		Stat	е		7	Country	/ G	ermany		Citizensl	hip	Germ	anv
Post 0	Office A	ddress	Neustrass	e 12						<u> </u>			<u> </u>			
Post C	Office A	Address	;													
City	4279	9 Leic	hlingen	State		Zi	р		Cou	untry	German	ıy	Applica Authori	int ty		
Nam	e of A	Addit	ional Joint II	rvento	r, if an	y:				A p	etition ha	is been fi	led for thi	s uns	signed	
	Given Name  Lothar  Middle Initial  Family Name  KINTRUP  Suffix e.g. Jr.  Date															
Inventor's Signature Date																
Residence: City Duesseldorf State Country Germany Citizenship Germany														any		
Post C	Office A	ddress	An der Gar	ather Mo	otte 15						***				-	
Post C	Office A	ddress														
City	4059	5 Dues	seldorf	State		Zip	· ·		Cou	ntry	German	у	Applicar Authorit	nt y		
Nam	e of A	\dditi	onal Joint Ir	vento	r, if any	<b>/:</b>				A pe	etition ha	s been fil	ed for this	s uns	igned	
Given Name		Burk	hard		Middle Initial			Fai Na	mily me	ES	CHEN			Suffi.		
Invento Signati												Date				
Reside	nce: C	ity C	uesseldorf		State			C	ountry	Ge	rmany		Citizenshi	ip	Germa	ny
Post O	ffice A	ddress	Doeberitzei	Strasse	18									-		
Post O	ffice A	ddress														
City	40599	Dues:	seldorf	State		Zip			Cour	ntry	Germany		Applican Authority	it /		
Name	of A	dditi	onal Joint In	ventor	, if any	:				A pe	etition has	been file	ed for this	unsi	gned	
Given Name		Ame	rigo		Middle Initial	T		Fan Nan	nily ne	PAS	STURA			Suffix e.g. J		
Invento Signatu												Date				
Reside	esidence: City Witten State Country Germany Citizenship Germany															
Post Of	fice Ac	dress	Sauerbruch	strasse	3a						-					$\dashv$
Post Of	fice Ac	ldress											<del></del>		<del></del>	——
City	State Zip Country Germany Applicant Authority															
×	Additio	nal inv	entors are being	named	on supple	men	al shee	et(s) at	tached	here	to					

Туре а р	olus s	ign (·	+) ins	side this box	·	<u></u>												
			DE	ECLAR	ATIC	ON									NVENTO		S)	
Name	of A	Addi	tior	nal Joint Ir	vento	r, if any	<b>/</b> :					A p	etition ha	as been f	iled for thi	s ur	signed	
Given Name		Peter							amil lame		WUELKNITZ			Suffix e.g. Jr.				
Inventor's Signature Date																		
Residence	ce: C	ity	Lei	chlingen		State	,			Cou	ntry	G	ermany		Citizenship Germ			any
Post Offic	ice A	ddres	ss	im Erlengru	ınd 9												<u> </u>	
Post Office Address																		
City 4	12799	) Lei	hlin	gen	State		Zi	р		1	Cou	ntry	German	ıy	Applica Authori	nt ty		
Name (	of A	\ddi	tion	al Joint In	vento	r, if any	<b>/</b> :					A p	etition ha	ıs been fi	led for thi	s un	signed	
Given Name		Rue	edig	jer		Middle Initial				amil ame		KN	NIEP			Sut e.g	fix . Jr.	
Inventor's Signature				ı									******	Date				
Residenc	ce: C	ity	Lan	genfeld		State	П			Cou	ntry	G	Germany		Citizenship		Germ	any
Post Offic	ice A	ddres	s	Wupperstra	sse 26a	l -												
Post Offic	ce A	ddres	s						_									
City 4	0764	Lan	genf	eld	State		Zip			(	Cour	etry Germany			Applicant Authority			
Name o	of A	ddit	ion	al Joint In	vento	, if any						A po	etition ha ntor	s been fil	led for this	un	signed	
Given Name		Har	ıs			Middle Initial	Fami Nam				′	LASKA				Suf e.g.		
Inventor's Signature					·						Date			Date				
Residenc	ce: Ci	ity	Lan	genfeld		State Co			Cour	ountry Germany				Citizensh	ip	Germa	any	
Post Offic	ce Ad	idres	s	Sperberstra	sse 10													
Post Offic	ce Ad	dres	s															
City 40	0627	Lang	genf	eld	State		Zip	·		C	oun	try	Germany	′	Applicar Authority	it /		
Name o	of A	ddit	ion	al Joint In	ventor	, if any	:				] i	A pe	etition has	s been file	ed for this	uns	igned	
Given Name		Mic	hae	1		Middle Initial			Fa Na	mily ame		ME	INDERS	3			ix Jr.	
Inventor's Signature														Date				
Residence: City Krefeld				State	Т		C	oun	untry Germany				Citizenship		Germa	ny		
Post Offic	ce Ad	ldres	s	Am Eichenh	of 11													
Post Offic	e Ad	dres	<u> </u>								***							
City 47	7800	Kref	eld		State		Zip			С	ount	try	Germany	Applicant Authority		t		
× Ac	dditio	nal ir	ivent	ors are being	named	on supple	men	ntal s	heet(s)	attar	hed	here	eto					
				9					(-/									

sign (+) inside this box →

1
120
LT.
14.3
18
11 12000

		DE	ECLAR	ATIC	N	·						ONAL IN				
Name of Additional Joint Inventor, if any:								A petition has been filed for this unsigned inventor								
Giver Name		Hans			Middle Initial			Far Nai		DC	LHAINE	<b>Ξ</b>			x Jr.	
Inven Signa				-								Date				
Resid	ence: (	City Gle	hn		State			Country Germany			ermany		Citizensh	ip	Germa	any
Post	Office A	Address	Bendgasse	20						•		<u> </u>				
Post	Office A	Address														
City	4135	2 Glehn		State		Zip			Cou		Germany		Applicant Authority			
Nan	e of	Additior	nal Joint In	ventor	, if any	:			A petition has been filed for this unsigned inventor							
Giver Name				\$	Middle Initial	Ī		Far Na						Suffi e.g.		
Inven	tor's ture			,								Date				
Resid	lence: (	City			State			C	ountry	T			Citizensh	ip		
Post	Office A	Address						•					<u> </u>			
Post	Office A	\ddress														
City				State		Zip			Country			Applica Authori			int ity	
Nan	e of	Additior	nal Joint In	ventor	, if any	•				A petition has been filed for this unsigned inventor						
Giver Name					Middle Initial			Family Name				Suffi e.g.				
Inven Signa												Date				
Resid	lence: (	City			State		Co	Country				Citizensh	ip			
Post	Office A	Address														
Post	Office /	Address														
City				State		Zip			Country				Applicant Authority			
Nan	e of	Addition	nal Joint In	ventor	, if any					A pe	etition has ntor	s been file	ed for this	s unsi	igned	
Given Name				Middle Initial			Fan Nar	nily ne						x Jr.		
Inventor's Signature												Date			-	
Resid	ence: (	City			State			Co	ountry				Citizensh	ip		
Post	Office A	\ddress														
Post	Office /	\ddress														
City				State		Zip			Cour	ntry			Applicar Authority	nt V		
	Addit	tional inve	ntors are being	named	on supple	ement	al shee	t(s) a	ttache	d here	eto					

	muš
:	
:	The state of the s
	## A
:	7
*****	-
	ž
:	
	2
	Z
;	in a
	-

Express Mail" mailing label number  Type a plus sign (+) inside this box →			oproved for use through: 10 k Office; U.S. DEPARTMEN	
0010/PTO U.S. E	repartment of Commerce ont and Trademark Office	Attorney Docket	H 4086 PCT/US	
DECLARATION	I FOR	First Named inventor	KROPF, Christian	
UTILITY OR DE		COM	PLETE IF KNOWN	
PATENT APPLIC		Application Number		
FAILNI AFFLIC	Alion	Filing Date		
Declaration OR X	Declaration	Group Art Unit		
Submitted With Initial Filing	Submitted after Initial Filing	Examiner Name		
I believe I am the original, first and sole inver of the subject matter which is claimed and for COMPOSITE MATERIALS CONSTITUENTS	r which a patent is sought of	on the invention entitled:		
Application Number PCT/EP00/05813  I hereby state that I have reviewed and unders amendment specifically referred to above.  I acknowledge the duty to disclose information.  I hereby claim foreign priority benefits under T certificate, or \$365(a) of any PCT International and have also identified below, by checking the having a filing date before that of the application.	stand the contents of the at	pended on (MM/DD/YYYY)  prove identified specification, included the specification and the specification and the specification and the specification and the specification for patent or inventor's certification.  Foreign Filing Date	uding the claims, as amended be of Federal Regulations, a 1.56 reign application(s) for patent or an the United States of America cate, or of any PCT International	if applicable). y any 6.
199 30 335.5 Germ	any	(MM/DD/YYYY) 7/2/1999	Not Claimed YES	NO X
Additional foreign application numbers a	re listed on a supplemental	priority sheet attached hereto:		
I hereby claim the benefit under Title 35, Unite	ed States Code ∍119(e) of a			
Application Number(s) F	iling Date (MW/DD/YYYY)	ar ar su	dditional provisional oplication numbers e listed on a applemental priority neet attached hereto.	

Type	а	plus	sign	(+)	inside	this	box →	

H 4086 PCT/US

## **DECLARATION**

Page 2

I hereby claim in designating the United States or disclose information date of the prior	he benefit under Title 35 United Sates of America PCT international appliation which is material to r application and the nati	<ul> <li>j, United States</li> <li>a, listed belogication in the compatentabilitational or PCT</li> </ul>	tes Code 31 w and, inso 3 manner pr ty as definer I internatior	20 of an far as th ovided but in Title all filing	y United S le subject i by the first 37, Code date of thi	States appropriate of paragrap of Feder is application	plication(s), each of the h of Title 3 al Regulation.	, or ∍3 e clain 5, Uni ons ∍1	65© of any F ns of this app ited States C 1.56 which b	PCT internations plication is not code ₃112.1 ack ecame available	al application disclosed in the mowledge the d e between the f	prior Juty to iling
U.S. I	Parent on Number	T Paren Number	nt	Pa	arent F	Filing D	Date		arent Pater	nt Number		
		<del>                                     </del>	P00/058			6/23/2000				,	140.0	
<del></del>	U.S. or PCT internation											_
Trademark Offic	entor, I hereby appoint the connected therewith:	he following .	attorney(s)	and/or as	gent(s) to p	prosecute	e this applic	cation	and to trans	act all business	in the Patent a	and
Firm Name OR	a						Customer Number	· o	or label			
l —	ley(s) and/or agent(s) na	ame and regi	<del></del>		ow:	<del> </del>						
	Name		Registra Numb	ation ber		_	ν.	Name	;		Registratio Number	on
Wayne C. J Glenn E. J. Stephen D.		21,062 33,539 33,243	9		Kimberly R. Hild Steven C. Bauman					39,224 33,832		
	attorney(s) and/or agent	t(s) named or	n a supplem	nental sh	eet attach	ied hereto	J.					_
to:	correspondence		or label 004			00423	3		OR X	X Fill in corre	espondence elow	
Name Address	Glenn E. J. Mur											_
Address	Henkel Corpora 2500 Renaissar		Suite 20	<del></del>								
City	Gulph Mills	100 0	Suite	<del>'</del>	State	TF	PA			Zip	19406	
Country	USA	Telepho	one	610-	-278-492			Fax	Y	610-278-6		
I hereby decinformation a willful false st	clare that all statement belief are belief are belief are that the telephone that the control of	ments mad	de herein	of my	own kno	nowledg	e are tru atement imprisor ts may je	ue an	nd that all	statements	made on	f in
	ole or First Inve			A petition has been filed for this ur						led for this unsig	aned inventor	
Given Name	Christian		Middle Initial		Far Na	amily ame	KROPE	F			uffix .g. Jr.	
· Inventor's Signature									Date			
Residence: City	, , , , , , , , , , , , , , , , , , , ,		State		С	Country	German	ny		Citizenship	Germany	
Post Office Add		strasse 4									<u> </u>	
Post Office Add		<del></del>										
City 40597 [	Duesseldorf	State	i;	Zip		Count	ry Ger	rmany	у	Applicant Authority		-
X Addition	nal inventors are beir	ing named c	on suppler	nental s	sheet(s) ?	attached	hereto			<u> </u>		

Type a plus sign (+) inside this box →

H 4086 PCT/US

Type a pi	us s	gn (+	-) ins	ide this box →													
			DE	CLARA	ATIO	N						ADDITION Sup	plemen			5) 	
Name o	of A	ddi	tion	al Joint In	ventor	, if any	:				A p	etition ha entor	s been fil	ed for thi	s un	signed	
Given Name		Pet	er	<u></u>		Middle Initial			Fan Nar	nily ne	w	UELKNI	ΓZ		Suf e.g	ffix . Jr.	
Inventor's Signature													Date	:   			
Residenc	æ: C	ity	Leic	hlingen		State			C	ountry	G	ermany		Citizensh	nip	Germ	any
Post Office	ce A	ddres	is	lm Erlengru	nd 9												
Post Office	ce A	ddres	ss														
City 4:	2799	) Leid	chlin	gen	State		Zip			Cou	ntry	German	у	Applica Authori	nt ty		
Name o	of A	ddi	tion	al Joint In	ventor	, if any	:				A p	etition ha	s been fil	ed for thi	s un	signed	
Given Name		Ru	edig	jer		Middle Initial			Fan Nar	nily ne	Κì	NIEP			Sut e.g	ffix . Jr.	
Inventor's Signature	Residence: City Langenfeld State Country Germany Citizenship Germany																
Residenc																	
Post Offic	Post Office Address Wupperstrasse 26a																
Post Offic	Post Office Address Wupperstrasse 26a																
City 4	Post Office Address																
Name (	of A	ddi	tion	al Joint In	ventor	, if any	:				A p	etition ha entor	s been fil	ed for thi	s un	signed	
Given Name		Hai	ns			Middle Initial	T		Fan Nar	nily ne	L/	SKA			Suf e.g	ffix . Jr.	
Inventor's Signature													Date				
Residenc	ce: C	ity	Lan	genfeld		State			Co	ountry	G	ermany		Citizensh	nip	Germ	any
Post Offic	ce A	ddres	ss	Sperberstra	sse 10												
Post Offic	ce A	ddres	ss														
City 4	0627	/ Lan	gent	eld	State		Zip			Cour	ntry	German	1	Applica Authorit	nt y		
Name o	of A	\ddi	tion	al Joint In	ventor	, if any					A p	etition ha	s been fil	ed for this	s un	signed	
Given Name		Mic	hae	ì		Middle Initial			Fan Nar	nily ne	MI	EINDERS	<u> </u>		Suf e.g	fix Jr.	
Inventor's Signature													Date				
Residenc	ce: C	ity	Kre	feld		State			Co	ountry	G	ermany		Citizensh	ip	Germ	any
Post Offic	ce A	ddres	ss	Am Eichenh	of 11												
Post Offic	ce A	ddres	ss														
City 4	7800	) Kre	feld		State		Zip			Cour	ntry	Germany	/	Applica Authorit	nt y		
×Α	dditi	onal	inver	itors are being	named	on supple	emen	ital sheet	(s) a	ttache	d he	reto					

sign (+) inside this box →

			DI	ECLAR	ATIC	N									NVENTO		S)	
	Nam	e of A	Additio	nal Joint In	vento	r, if any	:					A p	etition ha	s been fi	led for thi	s un	signed	
	Given Name		Hans			Middle Initial				Far Na	nily me	DC	DLHAINI	=		Su e.g	ffix . Jr.	
	Invent Signa													Date				
	Resid	ence: (	City Gle	ehn		State				C	ountry	G	ermany		Citizens	hip	Germ	suÀ
	Post 0	Office A	Address	Bendgasse	20													
	Post 0	Office A	ddress															
	City	4135	2 Glehn		State		z	ip			Cou	ntry	German	у	Applica Authori	nt ty		
	Nam	e of	Additio	nal Joint In	vento	r, if any	:					A p	etition ha	s been fi	led for thi	s un	signed	
	Given Name			7, 11		Middle Initial				Far Nar			****	. *		Suf e.g	ffix . Jr.	
#	Invent Signa													Date				
£ 1	Resid	ence: (	City	1		State		- Constant	* <del>-</del>	Co	ountry	Т			Citizens	nip		
H Warr	Post 0	Office A	ddress												•			
800	Post 0	Office A	ddress															***
the mil tim to the	City				State		Z	ip			Cour	ntry			Applica Authorit	nt y		
4.4 L	Nam	e of A	Additior	nai Joint In	ventoi	, if any	:					A p	etition ha ntor	s been fil	ed for this	s un:	signed	
# 4m	Given Name					Middle Initial				Fan Nar						Suf e.g.		
	Invent Signal													Date				
time the	Resid	ence: (	City			State				Co	untry				Citizensh	ip		
	Post C	Office A	ddress															
	Post C	Office A	ddress															
	City				State		Zi	p			Cour	itry			Applicar Authorit			
	Nam	e of A	Additior	nal Joint In	ventor	, if any:	:					A pe	etition has	s been fil	ed for this	uns	signed	
ĺ	Given Name					Middle Initial		-		Fan Nan	nily ne					Suff e.g.	īx Jr.	
	Invent Signat													Date				
ļ	Reside	ence: C	City			State				Со	untry				Citizensh	ip		
	Post C	Office A	ddress															
	Post C	Office A	ddress														****	
	City				State		Zi	р			Coun	try			Applicar Authority	nt /		
		Addit	ional inve	ntors are being	named	on supple	me	ntal	sheet	(s) at	itached	here	∍to					

<del></del>	s box →			PTO/SB/01 through: 10/31/98 OMB 065 EPARTMENT OF COMMERC
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket Number	H 4086 PC	CT/US
DECLARA	TION FOR	First Named Inventor	KROPF, (	Christian
UTILITY O	R DESIGN	CO	MPLETE IF K	NOWN
PATENT AF	PPLICATION	Application Number	r	
		Filing Date		
Declaration C	OR X Declaration Submitted after	Group Art Unit		
with Initial Filing	Initial Filing	Examiner Name		
he specification of which is attached hereto	ERIALS COMPRISED OF	the Invention)	THE AND PR	O I LIN
OR  x was filed on (MM/DD/YY)  pplication Number   DCT/ED06	0/23/2000		States Application N	lumber or PCT International
FONEFOL		nended on (MM/DD/YYYY)		(if applicable).
mendment specifically referred to	and understand the contents of the a above.  Information which is material to pater			
		a -440(a) (d) as -005(b) -6 6	oreign application(s	for patent or inventor's
hereby claim foreign priority benef ertificate, or э365(a) of any PCT In nd have also identified below, by c aving a filing date before that of th	fits under Title 35, United States Codi iternational application which designa :hecking the box, any foreign applicat e application on which priority is clair	e 3119(a)-(a) or 3355(b) of any to ated at least one country other the tion for patent or inventor's certif ned.	nan the United State ficate, or of any PC	s of America, listed below International application
hereby claim foreign priority beneficate, or э365(a) of any PCT In Ind have also identified below, by caving a filing date before that of the Prior Foreign Application Number(s)	fits under Title 35, United States Codd thernational application which designa checking the box, any foreign application application on which priority is clair Country	Foreign Filing Date (MM//DD/YYY)	nan the United State ficate, or of any PCT Priority Not Claimed	s of America, listed below International application  Certified Copy Attached?  YES NO
Prior Foreign Application			Priority	Certified Copy Attached?
Prior Foreign Application Number(s)  99 30 335.5	Country	Foreign Filing Date (MM/DD/YYYY) 7/2/1999	Priority	Certified Copy Attached? YES NO
Prior: Foreign Application Number(s)  99 30 335.5  Additional foreign application r	Country Germany	Foreign Filing Date (MM/DD/YYYY)  7/2/1999  I priority sheet attached hereto: any United States provisional ap	Priority Not Claimed	Certified Copy Attached? YES NO X Below.

Туре а	plus	sian	(+)	inside	this	box -	
. ,,,, .,	P.40		٠.,	1110100	0.03	DOV -	

H 4086 PCT/US

### **DECLARATION**

Page 2

				VAII								ge /	<b>-</b>			-
	I hereby clair designating t United State: disclose infordate of the pr	n the benef he United S s or PCT int mation whi rior applicat	it under Title 35 Sates of America ternational appli ch is material to tion and the nati	, United S a, listed be cation in t patentabi onal or PC	tates Code elow and, in he manner ility as defin T internation	∍120 o sofar a provide led in T onal fili	f any U s the si ed by th itle 37, ng date	Inited States ubject matte ne first parag Code of Fe of this app	s applicer of ear graph coderal F lication	cation(s), or sich of the clain of Title 35, Un Regulations si	365© of an ms of this a ited States 1.56 which	ny PCT applica Code becan	interna ition is r ∋112.1 ne avail	itional a not disc acknow able be	ipplicati losed ir vledge i tween t	on the prior the duty to he filing
	U.S Applica	S. Paren	nt	Р	CT Pare	ent		Parei	nt Fil	ing Date /YYYY)		are	nt Pa <i>if app</i>	tent	Num	
				PCT/E	P00/05			6/23/2		,,,,,			парр	Unca	ore)	<del>.</del>
	Addition	nal U.S. or F	PCT internationa	al applicat	ion number	s are lis	sted on	a supplem	ental pi	riority sheet a	ttached he	reto.				
	As a named i Trademark O	nventor, I h ffice conne	ereby appoint the cted therewith:	e followin	g attorney(s	s) and/o	or agen	t(s) to prose	ecute th	nis application	and to tra	insact :	all busir	ness in	the Pat	ent and
:	Firm Na	ıme								ustomer dumber	or label					
THE I	OR X List Atto	orney(s) and	l/cr agent(s) nar	me and re	gistration n	umber l	below:								-	
	Name Registration Number Registration Number  Wayne C. Jaeschke 21,062 Kimberly R. Hild 39,224 Glenn E. J. Murphy 33,539 Steven C. Rauman 23,833															
Com Till Ton	Number Number Number															
	Glenn E. J. Murphy 33,539 Steven C. Bauman 33,832															
13	Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.															
4	Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.  Please direct all correspondence X Customer Number or label 00423 OR X Fill in correspondence address below															
	Name	Gler	nn E. J. Murp	ohy	-											
222	Address		kel Corporat													
ŀ	Address		0 Renaissan	ce Blvd	, Suite 2	00										
ŀ	City		h Mills					ate	PA			Zi	р	1	9406	
ŀ	Country	USA		Teleph				3-4926		Fa			0-278			
	I hereby dinformation willful false Title 18 of to or any pate	eclare the and belicated statement in the unite entire the unite entire	at all statem ief are believents and the d States Co d thereon.	ents ma /ed to b like so r de and	ade herei e true; ai nade are that such	in of nond fur punit willfu	ny ow ther ti shabl ul fals	n knowle hat these e by fine e statem	edge a state or im ents i	are true ar ements we prisonmer may jeopa	nd that a re made nt, or bot rdize the	ll state with th, un valid	temen the k der S dity of	its ma nowle ection the a	de on dge ti 1001 pplica	hat l of ition
	Name of	Sole or	First Inver	ntor:						A petition	has been	filed fo	or this u	nsigned	i invent	or
	Given Name	Christ	ian		Middle Initial			Family Name	K	ROPF				Suffix e.g. J		_
ľ	Inventor's Signature										Date	T				
	Residence: 0	City Due	esseldorf		State			Countr	уС	ermany		Citi	izenshi	р	Germa	ınv
	Post Office A	ddress	Caecilienst	rasse 4		/		<u> </u>						<u> </u>		
	Post Office A	ddress														
	City <b>4059</b>	7 Duesse	ldorf	State		Zip		Co	untry	German	,	Ar	oplican	t		
L	X Addit	ional inver	ntors are being	g named	on supple	menta	al shee	et(s) attach	ed he	reto						

Type a plus sign (+) inside this box →

			DF	ECLARA	ATIC	N					l			IONAL IN		•	3) 	
Nam	e of	Addi	tion	nal Joint In	vento	r, if an	y:			,		A p inv∈	oetition ha entor	as been file	ed for thi	s un	ısigned	1
Given Name		Ma	ırcel			Middle Initial				Fan Nar	mily ime	RC	ОТН				uffix g. Jr.	
Invent Signa			_					_		_				Date				
Resid	lence: (	City	Dur	esseldorf		State	.e			C	ountry	Tg	ermany		Citizenst	nip	Germ	nany
Post (	Office A	Addres	ss	Am Nettche	sfeld 21													
Post (	Office A	Addre	ss					_										
City	4058	89 Due	esse	ldorf	State		Z	Zip			Cour	ntry	German	У	Applica Authorit			
Nam	e of	Addi	tior	nal Joint In	vento	r, if an	y:					A p inve	petition ha entor	as been file	ed for thi	s un	ısigned	1
Given Name		Ulri	ike			Middle Initial				Fan Nar	mily ime	BF	RUENING	GHAUS			ıffix g. Jr.	
Invent Signa			-				-			-				Date				
<u> </u>	lence: (	City	Мо	nheim		State	ie 7			Tc	ountry	TG	ermany	<del></del>	Citizensh	hip	Germ	any
	Office A		Ь—	An der Dorfs	fstrasse	تتل						Т_				**-	ــــــــــــــــــــــــــــــــــــــ	
Post (	Office A	Addre	ss												<del></del>			
City	<del>-</del>	B9 Mor		<u> </u>	State	$\top$	Tz	Zip			Cour	ntry	German	ıv	Applica	ant T		
-					<u> </u>				<u></u>	'		'	ــــــــــــــــــــــــــــــــــــــ	<u></u>	Authorit	ij		
Nam	e of	Addi	tion	nal Joint In	ventor	, if an	y: 					A prinve	etition has	as been file	ed for this	s un	signed	
Given Name		Ste	efan	]		Middle Initial		Ĺ		Fam Nan	nily me	ML	UELLNE	R		Suf e.g.	iffix g. Jr.	
Invent Signa										-				Date				
Resid	ience: (	City	Lar	ngenfeld		State	e			Cr	ountry	Gr	ermany		Citizensh	nip	Germa	any
Post (	Office A	Addres	ss	Hagebutten	weg 21					_		_						
Post (	Office A	Addres	ss					_				_						
City	4076	64 Lan	igenf	feld	State		Z	Zip			Coun	ntry	Germany	/	Applicar Authority	nt ty		
Nam	e of /	Addif	tion	nal Joint In	ventor	, if an	y:		_	-		A pe	etition ha	s been file	ed for this	s un	signed	
Given Name		Alb	orecl	ht		Middle Initial		<b></b> -		Fam Nam	nily me	WE	EISS		1	Suff e.g.	ffix J. Jr.	
Invent Signa														Date				
Resid	lence: (	City	Lan	ngenfeld		State	a	_		Cc	ountry	Ge	ermany		Citizenshi	ip	Germa	any
Post (	Office A	ddres	3S	Forellenweg	g 37			_										
Post (	Office A	\ddres	šS							_		_						
City	4076	34 Lan	genf	ield	State		Zi	ip			Coun	itry	Germany	,	Applican Authority	it y		
×	Addi	tional	inve	ntors are being	g named	on supr	olem:	enta	al shee	t(s) a	ttache	d her	eto					

	a pius	sign (	+) in:	side this box	<del>•</del>	<u> </u>												
			DI	ECLAR	RATIO	NC									INVENTO		S)	
Nam	ne of	Addi	tior	nal Joint I	nvento	r, if ar	ıy:					in	petition h	as been	filed for th	is ur	nsigne	d
Given Name		Pet	er			Middle Initial	)			Fa Na	mily ime	Ī	WUELKN	IITZ			iffix g. Jr.	
Inveni Signa												-		Date		<u> </u>		
Resid	ence:	City	Lei	chlingen		Stat	te			To	ountr	уΤ	Germany	<u> </u>	Citizens	hip	Gern	nanv
Post 0	Office A	Addres	s	lm Erlengr	und 9		-	<u> </u>					· <u>·</u>	<del></del>				
Post 0	Office /	Addres	s		-						-							·
City	4279	99 Leic	hlin	gen	State		Z	ip.			Co	untry	Germa	ny	Applica Author	ant ity		
Nam	e of	Addit	tion	al Joint Ir	rvento	r, if an	y:					A	petition h	as been t	iled for thi	is un	signed	<u></u>
Given Name		Rue	dig	jer		Middle Initial				Far Na	nily me	K	(NIEP			Suf e.g	ffix . Jr.	
Invent Signat	tor's ture													Date				<u> </u>
															Citizensi	nip	Germ	any
Post C	Citizenship Germany																	
Post C	Office /	\ddres:	s															
City	4076	4 Lang	genf	eld	State		z	ip			Cou	intry	German	ny	Applica Authorit	nt ty		
Nam	e of A	Addit	ion	al Joint In	vento	, if any	<b>y</b> :					A inv	petition ha	ıs been fi	led for this	s uns	signed	
Given Name		Han	s			Middle Initial				Fan Nan	nily ne	L	ASKA			Suff e.g.		
Invento Signati												<b>'</b>		Date			<u></u>	
Reside	nce: C	ity I	Lang	jenfeld		State				Со	untry	T	Sermany	<u> </u>	Citizensh	ip	Germa	any
Post O	ffice A	ddress		Sperberstra	sse 10						_							
Post O	ffice A	ddress	$\perp$	-											-			
City		7 Lang			State		Zi				Cour	ntry	German	у	Applican Authority	nt /		
Name	of A	\dditi	ona	ıl Joint In	ventor	, if any	<b>'</b> :					A p	etition ha	s been fil	ed for this	uns	igned	
Given Name		Mich	nael			Middle Initial		_		Fam Nam	ily e	M	EINDERS	3		Suffi e.g.		
Invento Signatu	r's ire													Date				
Reside			(refe	eld		State				Cou	intry	G	ermany		Citizenshi	p	Germa	ny
Post Of				Am Eichenh	of 11													
Post Of	fice A	dress																
City	47800	Krefe	ld		State		Zip				Coun	try	Germany		Applicant Authority			
×	Additio	onal inv	vento	ors are being	named o	n supple	emer	ntal	sheet(s	s) att	achec	i hei	reto					

sign (+) inside this box →

	D	ECLARA <sup>*</sup>	TIO	N									NVENTO		3)	
Name of	Additio	nal Joint Inve	entor	, if any	:					A p	etition ha	is been f	iled for th	is ur	signed	
Given Name	Hans			Middle Initial				Fai Na	mi <b>i</b> y me	DO	DLHAIN	E			ffix J. Jr.	
Inventor's Signature					-					<u> </u>	· · · · · · · · · · · · · · · · · · ·	Date		1		· · · · · · · · · · · · · · · · · · ·
Residence:	City Gle	hn		State	Т	-		С	ountry	G	ermany	L	Citizens	hip	Germ	any
Post Office	Address	Bendgasse 20						<u> </u>							1	
Post Office	Address							•				T				····
City 413	52 Glehn	S	tate		Ziį	р			Cou	ntry	German	У	Applica Authori	int ty		
Name of	Additio	nal Joint Inve	ntor	, if any	:					A p	etition ha	s been fi	led for thi	is un	signed	- W.L.
Given Name				Middle Initial				Far Nai						Sur e.g	ffix . Jr.	
Inventor's Signature							•		*			Date				
Residence:	City			State				C	ountry	T			Citizensi	nip		
Post Office	Address														•	
Post Office	Address															
City		S	tate		Zip	٥			Cour	ntry			Applica Authorit	nt ty		
Name of	Additior	nal Joint Inve	ntor,	if any:						A po	etition ha ntor	s been fi	ed for this	s un:	signed	
Given Name				Middle Initial	T			Fan Nan						Suf e.g.		
Inventor's Signature						-						Date				
Residence:	City			State				Co	untry				Citizensh	ip		
Post Office A	Address															
Post Office A	Address															
City		St	ate		Zip	<u>'</u>			Coun	try			Applicar Authorit	it y		
Name of	Addition	al Joint Inve	ntor,	if any:						A pe inver	etition has	been fil	ed for this	uns	igned	
Given Name				Middle nitial				Fam Nam	ily ne					Suff e.g.		
Inventor's Signature		47										Date				
Residence: (	<del>-'   _ ,</del>			State				Со	untry				Citizenshi	р		
Post Office A																
Post Office A	ddress				-	_										
City		Sta	ate		Zip				Count	try			Applican Authority	t T		
Addit	ional inven	tors are being na	med o	n supplei	men	tal s	sheet(s	s) at	tached	here	to					

"Express Mail" mailin	g label numl	per			<b>A</b>		thur wales 400	PTO/SB/01 (6-9
Type a plus sign (+	) inside this l	box →		Patent and Tra	•	•	•	31/98 OMB 0651-003 T OF COMMERCE
0010/PTO Rev. 6/95		U.S. Department of Patent and Traden		Attorney Docke	t	H 4086 PC	T/US	
DEC	I ARA	TION FOR	!	First Named Inventor		KROPF, C	hristian	
		R DESIGN	_		СОМ	PLETE IF KI	NOWN	
		PLICATIO	_	Application Nur	nber			
''		LIOAIIO		Filing Date				
Declarat	tion O	R X Declara	tion	Group Art Unit				
with Initi	al Filing	Initial Fi	ling	Examiner Name	Э			
the specification of which is attached OR	JENTS nich	NIALS COMP N		the Invention)			LIN	
X was filed or	n (MM/DD/YY)	γ) 6/23/2000		as U	Inited St	ates Application N	Iumber or PC	「International
Application Number	PCT/EP00	/05813	and was am	nended on (MM/DD/YYYY	ı		(it	fapplicable).
I hereby state that I had amendment specifical			tents of the al	bove identified specificati	on, inclu	iding the claims, a	s amended by	any
I acknowledge the du	ty to disclose i	nformation which is ma	iterial to pater	ntability as defined in Title	37 Cod	e of Federal Regu	lations, ∍ 1.56	
	priority benefi of any PCT In ed below, by c fore that of the	ts under Title 35, Unite ternational application hecking the box, any fo a application on which	d States Code which designa preign applicat priority is clain	e ∍119(a)-(d) or ∍365(b) o ated at least one country o tion for patent or inventor ned.	f any for other that is certific	reign application(s) an the United State cate, or of any PC	) for patent or es of America, l'International	inventor's listed below application
Prior Foreign Appl Number(s)	ication	Country		Foreign Filing Date (MM/DD/YYYY)		Priority Not Claimed	Certified C YES	opy Attached? NO
199 30 335.5		Germany		7/2/1999				X

Additional foreign application numbers are listed on a supplemental priority sheet attached hereto: I hereby claim the benefit under Title 35, United States Code 3119(e) of any United States provisional application(s) listed below. Additional provisional Filing Date (MM/DD/YYYY) Application Number(s) application numbers are listed on a supplemental priority

Burden Hour Statement: This form is estimated to take .4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington DC 20231.

sheet attached hereto.

Type a plus sign (+) inside this	s box →
----------------------------------	---------

Type a plus sign (+) inside this box →

H 4086 PCT/US

## **DECLARATION**

Page 2

U.S Applica	S. Paren	nt	P	CT Pare Numbe	ent	g date (	Paren	t Fili	ation(s), or sich of the claim f Title 35, Un egulations si ing Date YYYY)		arent Pa (if ap	atent	t Num		
			PCT/E	EP00/05	813		6/23/2	000				<u> </u>			
		PCT internationa													
As a named i Trademark O	nventor, I h	ereby appoint the cted therewith:	ie following	g attorney(s	) and/or	r agent(	(s) to prose	cute thi	is applicatior	n and to tran	sact all bus	iness i	n the Pat	ent ar	
Firm Na	me _								ıstomer ımber	or label				$\overline{\exists}$	
OR X List Atto	ernev(s) and	dior agent(s) na	me and re	rietration n	mher h	alone.		<b></b> 1 ·		Í					
Name Registration Number Name Registration Number Wayne C. Jaeschke 21,062 Kimberly R. Hild 39,224															
Wayne C. Jaeschke Glenn E. J. Murphy  Number  Number  Kimberly R. Hild 39,224 33,539 Steven C. Bauman 33,832															
Glenn E. J. Murphy 33,539 Steven C. Bauman 33,832															
Stephen D. Harper 33,539 Steven C. Bauman 33,243														)∠	
	Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.														
Please direct to:			Custome Number	er or la	abel		004	123		OR [	X Fill in addre	corres ess belo	pondence	е	
Name		nn E. J. Muri	· •											_	
Address Address		kel Corporation		Cuito 21	<del></del>		·								
City		o Renaissan oh Mills	Ce Divu	, Suite 20	)()	Sta	-10	PA	<del></del>	-	Т:	<del></del>	10.100		
Country	USA	· · · · · · · · · · · · · · · · · · ·	Teleph	none	T <sub>610</sub>		-4926	PA.	Fa		Zip 610-27	0 65	19406	ı	
willful false Title 18 of t or any pate	stateme the Unite ent issued		like so rode and t	ade herei e true; ar nade are that such	n of m nd furt punis willfu	ny owr her th shable I false	n knowle nat these by fine statemo	dge a state or imp ents n	re true ar	nd that all	stateme	nts m	nade or	า hat 1 of atio	
		First Inver	itor:	<u> </u>	<del></del>	· · · · · ·		L		n has been f	iled for this	unsign	ed invent	tor	
Given Name	Christ	ian ———		Middle Initial			Family Name	K	ROPF			Suff e.g.			
Inventor's Signature							<del></del>			Date		<u> </u>		_	
Residence: (	ity Du	esseldorf		State	T		Countr	v G	iermany		Citizensi	hip	Germa		
Post Office A	ddress	Caecilienst	trasse 4				<u> </u>		<u> </u>			1.7			
OSI Office /															
Post Office A	ddress														

			DI	ECLARA	ATIC	N		_						IONAL IN			š) ——	
Nam	e of	Addi	itior	nal Joint In	ventor	, if any						A p	petition ha entor	as been file	ed for thi	is un	isigned	
Given Name		Ma	arcel	(		Middle Initial		-		Fam Nam		RC	отн				uffix g. Jr.	
Invent Signa								_						Date				
Resid	dence: (	City	Du	esseldorf		State	T	_		Cc	ountry	TG	Germany		Citizenst	hip	Germ	iany
Post (	Office A	Addre	ss	Am Nettche	sfeld 21		_			_						_		
Post (	Office A	Addre	ss							_	_							
City	4058	89 Due	esse	ldorf	State		Zi	ip			Cour	ntry	German	у	Applica Authorit	int ity		
Nam	e of	Addi	itior	nal Joint In	ventor	, if any	<i>'</i> :					A p inv∈	petition ha entor	as been file	ed for thi	is un	ısigned	
Given Name		Ulr	rike			Middle Initial	1			Fam Nam		BF	RUENING	GHAUS			ıffix g. Jr.	
Inveni Signa							_			_	-	_		Date		_		
Resid	dence: (	City	Мо	nheim		State				Сс	ountry	G	Sermany		Citizensh	nip	Germa	any
Post (	Office A	Addre	ss	An der Dorfs	istrasse	6	1	_										
Post (	Office A	Addre	ss					_				_						
City	4078	89 <b>M</b> oi	nhei	m	State		Zij	р			Cour	ntry	Germany	у	Applica Authorit	int ity		
Nam	ie of	Addi	itior	nal Joint In	ventor	, if any	:					A p inve	oetition has entor	as been file	ed for thi	sun	signed	
Given Name		St€	efan	1		Middle Initial				Fam Nam		MU	UELLNE	R		Suf e.g.	iffix g. Jr.	
Invent Signa			_				_	_		_		_		Date		_		
Resid	dence: (	City	Lar	ngenfeld		State		_		Со	ountry	G	ermany		Citizensh	nip	Germa	any
	Office A			Hagebutten	weg 21		_	_		_	_							
Post (	Office A							_		_		_				_		-
City	4076	64 Lan	ngen	feld	State		Zij	P			Coun	ntry	Germany	<i>y</i>	Applica: Authorit	nt ty		
Nam	e of	Addi	tior	nal Joint In	ventor	, if any	:					A pinve	petition has entor	ıs been file	ed for this	s un	signed	·
Given Name		Alb	brec	;ht		Middle Initial	1	_		Fam Nam	nily ne	WE	EISS			Suff e.g.	ffix J. Jr.	
Invent Signa	ature											_		Date				
Resid	dence: (	City	Lar	ngenfeld		State				Со	ountry	Gr	ermany		Citizensh	nip	Germa	any
Post (	Office A	Addres	ss	Forellenweg	g 37							_				_		
Post (	Office A	Addres	ss				_	-		_						_		
City	4076	64 Lan	ngen <sup>4</sup>	feld	State		Zip	р			Coun	itry	Germany	,	Applicar Authority	nt ty		
×	Addi	tional	inve	ntors are being	g named	on suppl	ieme	ente	al sheet(	(s) a	ttache	d her	reto					

rype a	rpe a plus sign (+) inside this box → ADDITIONAL INVENTOR(S)																	
		_	DE	CLARA	ATIO	N			··					plement			)	
Name	of A	Addit	ion	al Joint inv	entor	, if any:						A p inve	etition ha ntor	s been file	ed for this	un	signed	
Given Name		Pet	er			Middle Initial			F	am Van	ily ie	W	UELKNI	ΓZ		Suf e.g		
Invento Signat														Date	<u> </u>		<del>_</del>	
Reside	ence: C	ity	Leic	hlingen		State				Со	untry	G	ermany		Citizensh	ip	Germ	any
Post C	ffice A	ddres	s	lm Erlengru	nd 9							_						
Post C	ffice A	ddres	s															
City	4279	9 Leic	hlin	gen	State		Zi	Р			Cou	ntry	German	у	Applicat Authorit	nt y		
Nam	e of A	Addi	tion	al Joint In	ventor	, if any						A p	etition ha entor	s been fil	ed for this	s un	signed	
Given Name		Ru	edig	jer		Middle Initial			Ī	Fan Nan	nily ne	K	NIEP			Suf e.g	ffix . Jr.	
Invent Signa								·						Date				
Resid	Residence: City Langenfeld State Country Germany Citizenship Germany																	
Post 0	ost Office Address Wupperstrasse 26a																	
Post 0	Office /	\ddres	SS															
City	4076	4 Lan	gen	feld	State		Zi	р			Cou	ntry	German	У	Applica Authorit	nt ty		
Nam	e of	Addi	tion	al Joint In	vento	r, if any	:					A p	etition ha	s been fil	ed for thi	s un	signed	
Given Name		Hai	ns			Middle Initial			1	Fan Nan	nily ne	L/	ASKA			Su e.g	ffix . Jr.	
Inveni Signa													·	Date				
Resid	ence:	City	Lar	genfeld		State				Co	ountry	G	ermany		Citizensh	nip	Germ	any
Post (	Office	Addre	ss	Sperberstra	sse 10													
Post (	Office	Addre	ss															
City	406	27 Lar	ngen	feld	State		Z	ip			Cou	ntry	German	ly	Applica Authori	nt ty		
Nam	ne of	Addi	itior	nal Joint In	vento	r, if any	' <b>:</b>					A p	etition ha	is been fi	led for thi	s un	signed	<u> </u>
Giver Name		Mic	cha	el		Middle Initial				Fan Nar	nily ne	М	EINDER	s		Su e.ç	ffix J. Jr.	
Inven Signa														Date			1	··· <u>·</u>
Resid	lence:	City	Kre	efeld		State				C	ountry	9	ermany		Citizensi	nip	Germ	any
Post	Office	Addre	ss	Am Eichen	nof 11													
Post	Office	Addre	ss			· ·			T									
City	478	00 Kr	efeld		State		Z	ip			Cou	intry	German	ny	Applica Authori	nt ty		
×	Add	itional	inve	ntors are bein	g named	on supp	iem	enta	al sheet(	(s) a	attach	ed he	ereto					

sign (+) inside this box →

			DI	ECLAR	ATIC	N				_	ADDITIONAL INVENTOR(S) Supplemental Sheet										
	Nam	ie of /	Additior	nal Joint In	vento	r, if any						A p inv€	petition ha entor	ıs been fi	led for thi	is un	signed				
	Given Name		Hans			Middle Initial					amily ame	DC	OLHAINE	E	-		ıffix g. Jr.				
	Invent Signat					<del></del>		-						Date							
ļ		dence: (	City Gle	∍hn		State	T	$\overline{}$		С	Country	TG	Germany	<u> </u>	Citizensl	hip	Germ	lany			
ſ	Post (	Office /	Address	Bendgasse	20										<u> </u>		<u> </u>				
	Post (	Office /	Address					_		_											
	City	4135	52 Glehn		State		Zij	ip			Cour	ntry	German	ıy	Applica Authori	int ity					
	Nam	ie of /	Additior	nal Joint In	vento	r, if any				<b></b>		Α p inve	petition ha entor	ıs been fi	led for thi	is un	ısigned	ī			
1	Given Name					Middle Initial	T	<b>I</b> —			amily ame					Suf e.g.	ıffix g. Jr.				
	Invent Signat											<u> </u>		Date			<u></u>	<u> </u>			
	Resid	dence: 0	City			State	T			C	Country	T		1	Citizensh	hip					
4	Post (	Office /	Address				_	_													
	Post (	Office /	Address						-								unsigned				
	City				State		Zip	р			Cour	Country		Applica Authorit	int ity						
	Nam	ie of /	Additior	nal Joint In	ventor	r, if any:	: ]					A p inve	petition has entor	s been fil	ed for thi	s un	signed				
	Given Name					Middle Initial	1	_			amily lame						ffix g. Jr.				
	Invent Signat						_	_						Date		-					
Taylor B		dence: C				State				C	Country				Citizensh	nip					
J	-		Address	<u> </u>				_		_											
		Office A	Address	<u> </u>	<del></del>		_	<del>_</del>							<del>-</del>	<del></del>					
Ì	City			!	State	11	Zip	P		_!	Coun	itry			Applicat Authorit	nt ty					
	Nam	ie of /	Addition	nal Joint In	ventor	r, if any:	:			-		A p	etition has entor	s been fil	ed for this	s un:	signed				
	Given Name	à	_			Middle Initial	T	<u> </u>		Fan Nan	mily ime					Suff e.g.					
	Invento Signat	tor's ature						_						Date			<u></u>				
Ī	Resid	dence: C	State	T			C,	ountry				Citizensh	ip								
	Post Office Address						_			_											
į		Office A	Address				_			_		_									
ļ	City				State		Zip	ρ		_	Coun	itry			Applicar Authority	nt ty					
	T	Addir	tional inve	ntors are being	g named	I on supple	eme	ntal	sheet	i(s) ?	attache	d her	reto								

	*****	2 2 2 2		
		2		
	*****	12	3	-
	1	12	4	:
	******	-		
		-		
		-		
	::			
	=			
į	11:11		2000	
:	=	:		
	=	1	A STORY	

Express Mail" mailing label numb	er					PTO/SB/01
Type a plus sign (+) inside this b	ox → 🔲					10/31/98 OMB 0651 ENT OF COMMERC
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office		orney Docket	H 4086 PC	T/US	
DECLARA	TION FOR		t Named entor	KROPF, C	hristiar	ו
UTILITY OF			co	MPLETE IF KI	VOWN	
PATENT API	PLICATION	App	olication Numbe			
		Filir	ng Date			
Declaration Ol Submitted	R X Declaration Submitted after	Gro	up Art Unit			
with Initial Filing	Initial Filing	Exa	miner Name			
of the subject matter which is claimed COMPOSITE MATER CONSTITUENTS	RIALS COMPRISED OF	CAL	CIUM COMPOU	NDS AND PR	OTEIN	
the specification of which is attached hereto  OR  x was filed on (MM/DD/YYYY	(Title of t	ne inve		States Application N	iumber or l	PCT International
Application Number PCT/EP00/	05813 and was am	ended (	on (MM/DD/YYYY)			(if applicable).
I hereby state that I have reviewed ar amendment specifically referred to all	pove.		·			,
I acknowledge the duty to disclose in	·		<del> </del>			
I hereby claim foreign priority benefits certificate, or >365(a) of any PCT Inte and have also identified below, by ch having a filing date before that of the	s under little 35, United States Code ernational application which designa ecking the box, any foreign applicati application on which priority is claim	ted at le ion for p ned.	i)-(d) or ∋365(b) of any east one country other to atent or inventor's cert	foreign application(s) han the United State ificate, or of any PC1	for patent s of Ameri Internation	or inventor's ica, listed below anal application
Prior Foreign Application Number(s)	Country	F	oreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certifie YE	d Copy Attached? ES NO
199 30 335.5	Germany	7/2/	1999			X
Additional foreign application nu	ımbers are listed on a supplemental	priority	sheet attached hereto:			
I hereby claim the benefit under Title	T	ny Unit		pplication(s) listed be		
Application Number(s)	Filing Date (MM/DD/YYYY)			Additional provisional application numbers are listed on a supplemental priority sheet attached heret		

Type a	plus	sign	(+)	inside	this	box 4	
--------	------	------	-----	--------	------	-------	--

H 4086 PCT/US

## **DECLARATION**

Page 2

I hereby claim the designating the L United States or disclose informat date of the prior a	e benefit under Title 35, hitted Sates of America PCT international appli ion which is material to application and the nation	United State, listed belocation in the patentability on all or PC	ates Code э ow and, inso e manner p ty as define i internation	120 of a ofar as the rovided d in Title nal filing	ny Unite he subje by the fire 37, Co date of	ed States ect matter rst paragi de of Fec this appli	applicat of each aph of leral Re cation.	ion(s), or ∋3 of the clair Fitle 35, Uni gulations ∍1	665© of any ns of this ap ited States C .56 which be	PCT internati plication is no ode ∍112.1 a ecame availa	ional appl ot disclose acknowled ble betwe	ication ed in the Ige the en the	e prior duty to filing
	Parent on Number		T Pare					ng Date	Pa	rent Pat (if app			r
		PCT/E	P00/058	13	(	6/23/20	000	ĺ					
	J.S. or PCT internation												
As a named invertigation of the control of the cont	ntor, I hereby appoint the connected therewith:	ne following	attorney(s)	and/or a	agent(s)	to prose	cute this	application	and to trans	sact all busine	ess in the	Patent	and
Firm Name OR	(2) 2.1(2)							tomer c	or label				]
	y(s) and/or agent(s) nar Name	me and reg	istration nui		low.			Name			I Pa	gistrat	ion
Wayne C. Ja Glenn E. J.			Num	ber	1.						1	Vumbe	)r
	Wayne C. Jaeschke Glenn E. J. Murphy Stephen D. Harper  21,062 Steven C. Bauman  39,224 Steven C. Bauman  33,832												
Additional at	ttomey(s) and/or agent	(s) named o	on a suppler	nental s	heet atta	ached he	reto.			· · · · · · · · · · · · · · · · · · ·	•		
Please direct all o	correspondence X	Custome Number	er or la	bel		004	23		OR 2	Fill in co	orrespond s below	lence	
Name	Glenn E. J. Mur	phy											
Address	Henkel Corpora												
Address	2500 Renaissar	nce Blvd,	Suite 20	0									
City	Gulph Mills USA			1 040	State		PA			Zip		406	
I hereby decl information ar willful false st Title 18 of the	are that all statement belief are belief are belief atements and the United States Coissued thereon.	Teleph nents ma ved to be like so n ode and t	de hereii	of my	own er tha able I false	knowle	dge a stater or imp ents m	re true ar ments we prisonment ay jeopa	nd that all	statemen with the kin, under So validity of	ts mad	e on ge tha 1001 d	at of on
Name of So	le or First Inve	ntor:						A petition	n has been fi	led for this u	nsigned ir	ventor	
Given Name	hristian		Middle Initial			Family Name	KF	ROPF			Suffix e.g. Jr.		
Inventor's Signature													
Residence: City Duesseldorf State Country Germany Citizenship Germany													
Post Office Add	ress Caeciliens	trasse 4											
Post Office Add	ress												
City 40597 D	uesseldorf	State		Zip	-	Со	untry	German	у	Applican Authority	t		
X Addition	al inventors are beir	ng named	on supple	mental	sheet(	s) attach	ed her	eto					

Type a plus sign (+) inside this box →

			DI	ECLAR	ATIC	ON					ADDITIONAL INVENTOR(S) Supplemental Sheet							-
	Nam	e of	Additior	nal Joint In	vento	r, if any	<b>/</b> :					A I	petition ha	as been fi	iled for th	is ur	signed	
	Given Name		Marce			Middle Initial					mily ame	R	ОТН				ffix j. Jr.	
	Invent Signa													Date				
ſ	Resid	ence: (	City Due	esseldorf		State				(	ountry	G	ermany		Citizens	hip	Germ	any
Ĩ	Post 0	Office A	\ddress	Am Nettche	sfeld 2	1									•			
ľ	Post 0	Office A	Address		<del></del>		•							· · · · · ·				
Ĺ	City	4058	9 Duesse	ldorf	State		Z	ip			Cou	ntry	German	ıy	Applica Author	ant ity		
	Nam	e of	Addition	nal Joint In	vento	r, if any	<b>/</b> :				Country Germany Applicant Authority  A petition has been filed for this unsign inventor  BRUENINGHAUS Suffix e.g. Jr.  Date  Country Germany Citizenship Ge  Country Germany Applicant Authority  Applicant Authority  Applicant Authority				signed			
I	Given Name		Ulrike			Middle Initial					amily ame BRUENINGHAUS							
	Invent Signa																	
	Residence: City Monheim State									С	ountry	G	ermany		Citizensi	hip	Germ	any
L.	Post Office Address An der Dorfstrasse 6																	
	Post C	Office A	Address															
	City	4078	9 Monhei	m	State		Zi	ip			Country Germany Applicant Authority							
18	Nam	e of	Addition	nal Joint In	vento	r, if any	<b>':</b>					A p	etition ha	s been fil	led for thi	s un	signed	
	Given Name		Stefan			Middle Initial				Fa Na	mily me	mily me MUELLNER Suffix e.g. J						
1	Invent Signal					-								Date				<u> </u>
	Resid	ence: (	City Lan	genfeld		State				С	ountry	G	ermany		Citizensh	qir	Germa	any
	Post C	Office A	ddress	Hagebutten	weg 21													
L	Post C	Office A	ddress										· ·				-	
L	City	4076	4 Langent	feld	State		Zi	р			Cour	ntry	German	7	Applica Authorit	nt y		
	Nam	e of A	Addition	al Joint In	vento	, if any	:					A p inve	etition ha	s been fil	ed for this	s un	signed	
	Given Name Albrecht Middle Initial									Far Na	nily me	WI	EISS			Sufi e.g.		
	Inventor's Signature								******					Date				
L	Reside	ence: C	ity Lan	genfeld		State				С	ountry	G	ermany		Citizensh	ip	Germa	any
L	Post C	Office A	ddress	Forellenweg	37													
Ĺ	Post C	Office A	ddress											· · · · · ·				
	City 40764 Langenfeld State Zip										Coun	itry	Germany	,	Applicar Authority	nt y		
L	Additional inventors are being named on supplemental sheet(s) attached										d her	eto						

Type a plus s	sign (+) in	side this box -	<u> </u>												
	D	ECLAR	ATIC	N					-			NVENTO		3)	
Name of A	Additio	nal Joint In	vento	r, if any	<b>':</b>				A p	etition he entor	as been fi	led for thi	s un	signed	
Given Name	Peter			Middle Initial			Far Na	nily me	w	UELKNI	TZ		Sur e.g	ffix . Jr.	
Inventor's Signature								_			Date				
Residence: 0	City Lei	chlingen		State	T		С	ountry	G	ermany		Citizensl	nip	Germ	any
Post Office A	ddress	lm Erlengru	ınd 9												
Post Office A	ddress														
City 4279	9 Leichlir	ngen	State		Zij	Р		Cou	ntry	German	ıy	Applica Authori	nt ty		
Name of A	Additio	nal Joint In	vento	, if any	:				A p	etition ha	is been fi	led for thi	s un	signed	
Given Name	Ruedi	ger		Middle Initial			Far Nai	nily ne	KI	NIEP			Suf e.g		
Inventor's Signature											Date				
Residence: 0	City Lai	ngenfeld		State			C	ountry	G	ermany		Citizensh	nip	Germa	any
Post Office A	ddress	Wupperstra	sse 26a												
Post Office A	ddress											-			
City 4076	4 Langen	feld	State		Zip	0		Cou	ntry	German	у	Applica Authorit	nt y		
Name of A	Addition	nal Joint In	ventor	, if any	:				A p	etition ha	s been fil	ed for this	s un:	signed	- <u>-</u>
Given Name	Hans	<u>-</u>		Middle Initial			Fan Nar		LA	SKA			Sufi e.g.		
Inventor's Signature											Date				
Residence: C	ity Lar	ngenfeld		State	$\Box$		Co	untry	G	ermany		Citizensh	ip	Germa	iny
Post Office A	ddress	Sperberstra	sse 10					-							
Post Office A	ddress														
City 4062	7 Langen	feld	State		Zip	)		Cou	ntry	German	у	Applicar Authorit	nt y		
Name of A	Addition	nal Joint In	ventor	, if any					A poinve	etition ha	s been file	ed for this	uns	signed	
Given Name	Michae	el		Middle Initial			Fan Nan	nily ne	ME	INDER	3		Suff e.g.		
Inventor's Signature											Date				
Residence: C	ity Kre	feld		State	T		Со	untry	Ge	rmany		Citizenshi	ip	Germa	ny
Post Office A	ddress	Am Eichenh	of 11									<del></del>			
Post Office A	ddress		······································		_					<del></del> -					
City 4780	) Krefeld		State		Zip			Cour	itry	Germany	′	Applican Authority	it /		- <u>-</u>
× Additi	ional inver	ntors are being	named	on supple	mer	ntal sheet	(s) at	tache	d her	eto		<u> </u>			
							,								

sign (+) inside this box →

		DI	ECLARA	ATIC	N				ADDITIONAL INVENTOR(S) Supplemental Sheet							
Nam	e of /	Addition	nal Joint Inv	ventor	r, if any	:				A p inve	etition ha	as been file	ed for thi	s uns	signed	
Given Name		Hans			Middle Initial	T			amily lame	DC	OLHAINE	=		Suffi e.g.		
Invent Signat												Date				
Reside	ence: C	City Gle	÷hn		State	T		$\prod_{i}$	Country	G	ermany		Citizensh	nip	Germa	any
Post C	Office /	Address	Bendgasse	20												
Post C	Office A	Address				_										
City	4135	52 Glehn		State		Zip	٥ _	_	Cour	ntry	German	у	Applica Authorit	nt ty		
Nam	e of /	Additior	nal Joint In	ventor	r, if any	:				A p inve	etition ha	as been file	ed for thi	s uns	signed	
Given Name					Middle Initial	T	1		amily lame			, and a second		Suffi e.g.		
Invent Signat				<u> </u>		_				<u> </u>		Date				<u> </u>
	ence: C	City	:		State	T			Country Citizens				Citizensh	nip		
Post C	Office A	Address						_				<u> </u>				
Post C	Post Office Address Post Office Address					_							<del></del>			
City				State		Zip	_ آ م		Cour	ntry			Applicant Authority			
Nam	e of /	Additior	nal Joint In	ventor	r, if any					A po	etition ha	s been file	ed for this	s uns	igned	
Given Name									amily lame					Suffi e.g.		
Invent Signat												Date		<del></del>		
Reside	ence: C	City			State	I		T	Country				Citizensh	nip		
Post C	Office A	Address				_		_		_						
Post C	Office A	Address				_				_						
City				State		Zip	,		Coun	ntry			Applica: Authorit	nt iy		
Nam	e of /	Addition	ventor	r, if any:					A pe	etition had	s been file	ed for this	s uns	igned		
Given Name				Middle Initial	Ţ		Fi N	amily lame			****		Suffic e.g.			
	Inventor's Signature						<del></del>					Date				
<u> </u>	Residence: City				State	Т	·	<del></del>	Country	T			Citizensh	nio dir		
-	Post Office Address									—				7		
Post C	Office A	Address			***************************************											
City			7	State		Zip	<u>,                                    </u>	<del></del>	Cour	ntry			Applicar	nt		
	4				Country Applicant Authority						,					

xpress Mail" mailing label numbe	Pr				PTO/SB/01 (
Type a plus sign (+) inside this bo	ox → □	Р		•	through: 10/31/98 OMB 0651- EPARTMENT OF COMMERC
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office	Attor	ney Docket	H 4086 PC	T/US
DECLARAT	ION FOR		Named ntor	KROPF, C	hristian
UTILITY OR	RDESIGN		COM	IPLETE IF KI	NOWN
PATENT APP	PLICATION	Appl	ication Number		
		Filing	g Date		
Declaration OR	Declaration Submitted after	Grou	ıp Art Unit		
Submitted with Initial Filing	Initial Filing	Exar	miner Name		
of the subject matter which is claimed COMPOSITE MATER CONSTITUENTS	IALS COMPRISED OF		IUM COMPOUN	IDS AND PR	OTEIN
OR  was filed on (MM/DD/YYYY  Application Number PCT/EP00/0  hereby state that I have reviewed anamendment specifically referred to ablacknowledge the duty to disclose info	and was am d understand the contents of the above.	oove iden	n (MM/DD/YYYY)	uding the claims, a	
hereby claim foreign priority benefits certificate, or s365(a) of any PCT Inter and have also identified below, by che naving a filing date before that of the a	under Title 35, United States Code rnational application which designa scking the box, any foreign applicati application on which priority is claim	e ∍119(a)- ted at lea ion for pa ned.	-(d) or ∋365(b) of any fo st one country other th tent or inventor's certifi	reign application(s) an the United State cate, or of any PC	for patent or inventor's s of America, listed below International application
Prior Foreign Application Number(s)	Country	T	reign Filing Date MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO
199 30 335.5	Germany	7/2/1	999		X
Additional foreign application nu	mbers are listed on a supplemental	l priority s	sheet attached hereto:		
hereby claim the benefit under Title		any Unite			
Application Number(s)	Filing Date (MM/DD/YYYY)		a a s	dditional provisional provisional pplication numbers re listed on a supplemental priority theet attached heret	,

Type a plus sign (+) inside this box →	H 4086 PCT/US
DECLARATION	Page 2

I hereby claim the benefit under Title 35, United States Code \$120 of any United States application(s), or \$365© of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code \$112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations \$1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application. **Parent Patent Number** U.S. Parent **Parent Filing Date PCT Parent** (if applicable) (MM/DD/YYYY) **Application Number** Number 6/23/2000 PCT/EP00/05813 Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto. As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Customer Number Firm Name OR List Attorney(s) and/or agent(s) name and registration number below: Registration Number Name Registration Name 39,224 21,062 Kimberly R. Hild Wayne C. Jaeschke 33,832 Glenn E. J. Murphy Steven C. Bauman 33,539 33,243 Stephen D. Harper Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto. OR Fill in correspondence address below 00423 Please direct all correspondence to: Customer Number or label Glenn E. J. Murphy Name Henkel Corporation Address 2500 Renaissance Blvd, Suite 200 Address 19406 PA Zip State City **Gulph Mills** Fax 610-278-6548 610-278-4926 **USA** Telephone Country I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. A petition has been filed for this unsigned inventor Name of Sole or First Inventor: Family Suffix Middle Initial **KROPF** Given Name Christian Name e.g. Jr. Date Inventor's Signature Citizenship Germany Country Germany Residence: City Duesseldorf State Post Office Address

OSL	Jilice Address	Caccinens	10330 7					
ost (	Office Address							
City	40597 Duesse	ldorf	State	Zip	Country	Germany	Applicant Authority	
×	Additional inve	ntors are beir	g named on s	upplemental she	et(s) attached he	reto		

Type a plus sign (+) inside this box →

		DI	ECLAR	ATIC	NC								IONAL IN			S)	
Name	of /	Additior	nal Joint In	vento	r, if any	/:					A p inv€	petition ha	as been fil	led for th	is ur	nsigned	1
Given Name		Marcel	ı		Middle Initial					amily ame	R	ОТН				ıffix g. Jr.	
Inventor Signatur								· · · · · · · · ·					Date		<del>'</del>		4
Residen	nce: (	City Du	esseldorf	10.00	State	Ţ	Γ		Tc	Country	G	Sermany	-	Citizens	hip	Gern	nany
Post Off	fice A	ddress	Am Nettche	sfeld 2	1		_										
Post Off	fice A	ddress							_								
City 4	4058	39 Duessel	ldorf	State		Z	Zip		_	Cour	ntry	German	ıy	Applica Authori	ant ity		
Name	of A	Addition	nal Joint In	vento	r, if any	<b>':</b>					A p	petition ha entor	as been fil	ed for thi	is un	signed	l
Given Name		Ulrike			Middle Initial	J	<b></b>			amily ame	BF	RUENING	GHAUS			iffix g. Jr.	T
Inventor Signatur	ire												Date		_		
Residen		7 1	nheim		State		Ē		c	Country	G	ermany		Citizensh	nip	Germ	any
Post Offi			An der Dorfs	strasse	6		_										
Post Offi			<u></u>			_			_								
City 4	10789	9 Monhein	m	State	<u> </u>	Zi	ip			Coun	ntry	German	у	Applica Authorit	nt ty		
Name	of A	ddition	nal Joint Inv	ventor	r, if any	:			1		A pe	etition ha	ıs been file	ed for this	s un	signed	
Given Name		Stefan			Middle Initial				Far Na	mily ime	ML	JELLNE	R		Suf e.g.		
Inventor' Signature	's re						_						Date			<u></u>	<b>L</b>
Residen	ce: C	ity Lan	ngenfeld		State		_		C	ountry	Ge	ermany		Citizensh	ip	Germa	any
Post Offi	ice Ar	ddress	Hagebuttenv	weg 21		_			_		_						
Post Offi						_	_		_								
City 4	10764	4 Langenf	eld	State		Zip	р		/	Count	try	Germany	/	Applicar Authority	nt y		
Name (	of A	.ddition	nal Joint Inv	entor	, if any:				-	i l	A pe inven	∍tition has ntor	s been file	d for this	s uns	signed	
Given Name		Albrech	nt		Middle Initial	Ţ	<u></u>		Fam Nam	nily me	WE	EISS			Suff e.g.	fix Jr.	
Inventor's Signature	re												Date				,
Residence	ce: Ci	ity Lan	ngenfeld		State	I	_		Cc	ountry	Ge	ermany		Citizenshi	ip	Germa	any
Post Offic	ce Ac	Jdress	Forellenweg	, <b>37</b>		_	_									·····	
Post Offic	ce Ad	Idress				_	_		_						-		
City 4	0764	4 Langenfe	eld	State		Zip	2			Count	iry	Germany		Applican Authority	ıt /		
×Α	dditic	onal inven	ntors are being	named	on supple	me	ntal	sheet	(s) a	ttached	here	eto					

Туре	a plus	sign (	(+) in	side this box -													_
			DI	ECLAR	ATIC	N								NVENTO		S)	
Nan	ne of	Add	itio	nal Joint In	vento	r, if any	<b>/</b> :				A inv	petition ha	as been f	iled for th	is ur	nsigned	l
Give Nam		Uli	rich			Middle Initial			Fan Nar	nily ne	s	CHOER	KEN			ffix J. Jr.	
Inver Sign:								·					Date				
Resi	dence:	City	Lei	chlingen		State			Co	ountry	, (	Germany		Citizens	hip	Germ	nany
Post	Office /	Addre	ss	Neustrasse	12					-				· · · · · · · · · · · · · · · · · · ·			
Post	Office A	Addre	ss				***										
City	4279	9 Lei	ichlir	ngen	State		Zi	ip		Cou	intry	German	ıy	Applica Authori	int ty		
Nan	ne of	Add	itior	nal Joint In	vento	r, if any	<b>/</b> :				A inv	petition ha entor	ıs been fi	iled for thi	s un	signed	
Give Nam	n e	Lo	thaı	•		Middle Initial			Fan Nan		ĸ	INTRUP				ffix . Jr.	
Inver Sign													Date				
Resid	lence:	City	Due	esseldorf		State	П		Со	untry	1	Sermany	I	Citizensl	qir	Germ	any
Post	Office /	Addre	SS	An der Gara	ather Mo	tte 15								<u> </u>		<u> </u>	
Post	Office /	Addre	ss										·			-	<del></del>
City	4059	5 Du	esse	ldorf	State		Zi	р		Cou	ntry	German	У	Applica Authorit	nt	· · · · · · · · · · · · · · · · · · ·	
<u> </u>					<u> </u>	<u> </u>	<u> </u>		ļ			J		Authori	У		
Nan	ne of ,	Addi	tior	ial Joint In	ventor	, if any	:		į		A p	etition ha entor	s been fi	led for this	s un	signed	
Giver Name		Bu	rkha	ard		Middle Initial			Fam Nam	ily ne	ES	SCHEN			Suf e.g.		
Inven Signa													Date				
Resid	lence: (	City	Due	esseldorf		State			Co	untry	G	ermany		Citizensh	ip	Germa	any
Post	Office A	\ddre:	ss	Doeberitzer	Strasse	18							•				
Post	Office A	\ddre:	ss														
City	4059	9 Du	esse	ldorf	State		Zip	)		Cour	ntry	German	у	Applicar Authorit	nt y		
Nan	ne of	Addi	tion	al Joint In	ventor	, if any	:				A p	etition ha	s been fil	ed for this	uns	signed	
Giver Name		Am	erig	lo		Middle Initial			Fam Nam	ily e	PA	STURA			Suff e.g.		
Inven Signa													Date				
Resid	ence: (	City	Witt	en		State			Cou	untry	G	ermany		Citizensh	ip	Germa	iny
Post	Office A	ddres	ss	Sauerbruch	strasse	3a								-			
Post (	Office A	ddres	ss														
City	5845	3 Wit	ten		State		Zip			Coun	try	Germany	·	Applican Authority	ıt /		
x	Addit	ional	inven	itors are being	named	on supple	emer	ntal sheet	(s) att	ache	d her	eto					

			D	ECLAR	ATIC	N								ONAL IN			i) 	
Na	ame	of /	Additio	nal Joint In	vento	r, if any:	:					A po	etition ha	s been file	ed for this	s un	signed	
Giv Na	iven ame		Hans			Middle Initial				Fai Na	mily me	DC	LHAINE			Suf e.g	ffix . Jr.	
	vento gnatu													Date				
Re	eside	nce: C	City GI	ehn		State	Ţ			C	ountry	G	ermany		Citizensh	nip	Germ	any
Pc	ost O	ffice A	Address	Bendgasse	20		_									_		
Pc	ost O	ffice /	Address				_	_								_		
Ci	ty	4135	52 Glehn		State		Zi	p			Cour	ntry	German	у	Applica Authorit	nt ty		
N	ame	e of /	Additio	nal Joint In	vento	r, if any	:					A po	etition ha	s been fil	ed for thi	s un	signed	
	iven ame					Middle Initial	T	<b>.</b>			mily me			·		Sut e.g	ffix . Jr.	
Si	vento													Date				·
Re	eside	ence: (	City			State	$\Box$			C	ountry				Citizensh	nip		
Po	ost O	ffice /	Address															
P	ost O	ffice /	Address															
	ity				State		Zi	ip			Cou	ntry			Applica Authorit	nt ty		
	ame	∍ of /	Additio	nal Joint In	vento	r, if any	:					A poinve	etition ha	s been file	ed for this	s un	signed	
	iven ame					Middle Initial					mily me					Sut e.g		
ln Si	vento ignati													Date				
R	eside	ence: (	City			State				С	ountry				Citizensh	nip		
	ost O	ffice /	Address															
Po	ost O	ffice /	Address					_			,							······
. Ci	ity			<u> </u>	State		Zi	ip	<u> </u>		Cou	ntry			Applica Authorit	nt ty		
N	ame	∍ of /	Additio	nal Joint In	ivento	r, if any	:					A poinve	etition ha	s been file	ed for this	s un	signed	
	iven ame					Middle Initial	$\Box$			Fa Na	mily me					Suf e.g	ffix . Jr.	
	vento ignati													Date				
Re	eside	ence: (	City			State				C	ountry	$\bot$			Citizensh	ıip		
P	ost O	ffice /	Address															
P	ost O	ffice F	Address					_										
Ci	ity				State		Zi	ip			Cou	ntry			Applicar Authorit	nt y		
	$\sqcap$	Addi	tional inv	entors are bein	ig named	d on suppl	eme	enta	al shee	et(s) :	attache	ed her	eto		<u> </u>			

Express Mail" mailing label number		PTO/SB/01 (6-9
Type a plus sign (+) inside this box →	· ·	pproved for use through: 10/31/98 OMB 0651-003 k Office; U.S. DEPARTMENT OF COMMERCE
0010/PTO U.S. Department of Commerce Rev. 6/95 Patent and Trademark Office	Attorney Docket Number	H 4086 PCT/US
DECLARATION FOR	First Named Inventor	KROPF, Christian
UTILITY OR DESIGN	СОМ	IPLETE IF KNOWN
PATENT APPLICATION	Application Number	
	Filing Date	
Declaration OR X Declaration Submitted	Group Art Unit	
with Initial Filing Initial Filing	Examiner Name	
I believe I am the original, first and sole inventor (if only one name is lis of the subject matter which is claimed and for which a patent is sought COMPOSITE MATERIALS COMPRISED OF CONSTITUENTS	on the invention entitled: CALCIUM COMPOUN	· · · · · · · · · · · · · · · · · · ·
the specification of which (Title of its attached hereto	the Invention)	
OR was filed on (MM/DD/YYYY) 6/23/2000	as United S	tates Application Number or PCT International
Application Number PCT/EP00/05813 and was an	ended on (MM/DD/YYYY)	(if applicable).
I hereby state that I have reviewed and understand the contents of the all amendment specifically referred to above.  I acknowledge the duty to disclose information which is material to paten	•	
I hereby claim foreign priority benefits under Title 35, United States Code certificate, or >365(a) of any PCT International application which designa and have also identified below, by checking the box, any foreign applicate having a filing date before that of the application on which priority is claim	e a119(a)-(d) or a365(b) of any fo tied at least one country other that tion for patent or inventor's certified.	reign application(s) for patent or inventor's an the United States of America, listed below cate, or of any PCT International application
Prior Foreign Application Country Number(s)	Foreign Filing Date (MM/DD/YYYY)	Priority Certified Copy Attached?  Not Claimed YES NO
199 30 335.5 Germany	7/2/1999	X X
Additional foreign application numbers are listed on a supplementa	I priority sheet attached hereto:	
I hereby claim the benefit under Title 35, United States Code ∍119(e) of		
Application Number(s) Filing Date (MM/DD/YYYY)	al au su	dditional provisional pplication numbers re listed on a upplemental priority heet attached hereto.

	Type a plus sign	(+) inside this box	( ,							H 40	86 PCT/US
١		DECLAF	RATIO	N				Pag	je 2	<u> </u>	
	United States of FV	penefit under Title 35 ited Sates of Americ CT international appl n which is material to plication and the nat	natentahility	as defined in	Title 37 Code of	of Federal Regul	(s), or ∍36 the claims e 35, Unite ations ∍1.5	5© of any s of this a ed States 56 which I	PCT pplical Code becam	international a tion is not disc •112.1 ackno- ne available be	application closed in the prior wledge the duty to etween the filing
	U.S. Pa	arent	PC	Γ Parent umber	Pa	rent Filing MM/DD/YY		P		nt Patent if applica	
	Application	Humber		00/05813		3/2000			•		
	Additional U.	S. or PCT internation	nal application	numbers are	listed on a sup	olemental priority	y sheet att	ached he	reto.		
	As a named invent	tor, I hereby appoint connected therewith:	the following a	attorney(s) and	d/or agent(s) to	prosecute this a	pplication	and to tra	nsact	all business in	the Patent and
	Firm Name OR					Custo Numb		r label			
	X List Attorney	(s) and/or agent(s) n	ame and regis				Nome				Registration
		Name		Registrat Numbe	r		Name				Number
	Wayne C. Ja Glenn E. J. N Stephen D. I	Иurphy		21,062 33,539 33,243		nberly R. Hil ven C. Bau					39,224 33,832
12	Additional at	tomey(s) and/or age	nt(s) named o	n a suppleme	ntal sheet attac	ned hereto.					
	Please direct all c	orrespondence	X Custome Number	r or labe	1	00423		OR	х	Fill in corres address be	spondence ow
	Name	Glenn E. J. M	urphy								
	Address	Henkel Corpo	ration								
127	Address	2500 Renaiss	ance Blvd,	Suite 200							
	City	Gulph Mills			State	PA				Zip	19406
	Country	USA	Teleph	one	610-278-49	26	Fa	ax		310-278-6	548
	information at willful false st Title 18 of the	lare that all state nd belief are be atements and the United States	lieved to be ne like so n Code and t	e true; and	turtner tnat unishahle h	tnese staten v fine or impi	nenis we risonme	nt or b	oth. i	under Sect	ion 1001 of
	or any patent	issued thereon	•								

Nan	ne of	Sole	or l	First Inven	itor:				L	A petition	n has been	filed for this ur	nsign	ed inventor	
Giver Name		Ch	risti	an		Middle Initial		Family Name	K	ROPF			Suf e.g.		
Inver Signa											Date				
Resid	ience:	City	Due	esseldorf		State		Count	ry (	Germany		Citizensh	ip	German	У
Post	Office A	Addre	ss	Caecilienst	rasse 4										
Post	Office A	Addre	ess												
City	4059	97 Du	esse	ldorf	State		Zip	Co	ountry	German	ıy	Applicar Authority			
[×	Add	itiona	l inve	ntors are bein	ng named	on supple	emental s	heet(s) attac	hed he	ereto					

Type a plus sign (+) inside this box →

		DECLAR	ATIC	NC		_						IONAL IN			S)	
Name o	of Addition	ional Joint Ir	nvento	r, if any	/ <b>:</b>					A p inv€	petition ha entor	as been file	ed for thi	is ur	nsigned	i
Given Name	Marc	:el		Middle Initial					mily ame	R	ОТН				uffix g. Jr.	
Inventor's Signature				<u></u>						т		Date			·	<u> </u>
Residenc	e: City [	Duesseldorf		State	Ţ	$\Gamma$		С	ountry	, Те	Germany		Citizens	hip	Germ	nany
Post Offic	ce Address	Am Nettche	iesfeld 2	.1		_			F-11							-
Post Offic	ce Address	,			_	_										
City 40	0589 Dues:	seldorf	State		Z	Zip			Cou	ntry	German	ıy	Applica Authori	int ity		
Name o	of Addition	ional Joint Ir	nvento	r, if any	<b>:</b>			<u>-</u>		A p inv€	petition ha entor	as been file	ed for thi	is ur	ısigned	J
Given Name	Ulrik	.e		Middle Initial		<u>-</u>		Fan Nar	mily ime	BF	RUENING	GHAUS			ıffix g. Jr.	
Inventor's Signature	<u> </u>				_			_				Date		<u> </u>		
Residence		Monheim		State				Cr	ountry	G	ermany		Citizensh	nip	Germa	any
	ce Address	7	fstrasse	<i>:</i> 6												
	ce Address		<del></del>	<del></del>	τ_				т		<del></del>					
City 40	0789 Monh	eim	State		Zi	<u>Zip</u>		/	Cour	ntry	Germany	y 	Applica Authorit	nt ty		
Name c	of Addition	onal Joint In	nvento	r, if any	:					A p	etition has entor	as been file	ed for thi	s un	signed	<del></del>
Given Name	Stefa	ın		Middle Initial	J			Farr Nan		Mt	UELLNEI	.R		Suf e.g.	ffix j. Jr.	
Inventor's Signature												Date				
Residence	ə: City L	angenfeld		State	I			Cc	ountry	Gr	ermany		Citizensh	nip	Germa	any
Post Offic	e Address	Hagebutter	nweg 21		_	_		_		_					<u> </u>	
Post Offic	e Address				_	_		_		_						
City 40	0764 Lange	nfeld	State		Ziţ	ρ		î	Coun	ıtry	Germany	/	Applicar Authorit	nt ly		
Name o	f Additic	onal Joint In	ventor	r, if any:	:					A pe	etition has intor	s been file	d for this	s un:	signed	
Given Name	Albre	cht		Middle Initial	I	_		Fam Nam		WE	EISS			Suff e.g.		
Inventor's Signature					_							Date				
Residence	a: City La	angenfeld		State		_		Со	ountry	Ge	ermany		Citizenshi	ip	Germa	any
Post Offic	e Address	Forellenwe	g 37		_											
	e Address				_	_										
City 40	764 Lange	nfeld	State		Zip	وَ			Count	try	Germany	1	Applican Authority	it y		
× Ad	iditional inv	ventors are being	ig named	on supple	∍me	:nta	l sheet	.(s) a	ttacher	d her	eto					

Туре	a plus	sign (	(+) in	side this box +	<u> </u>													
			D	ECLAR	ATIC	N								IONAL I pplemei			S)	
Nan	ne of	Add	itio	nal Joint In	vento	r, if any	<b>/</b> :						petition ha	as been f	iled for th	is u	nsigned	i
Giver Name		Uli	rich			Middle Initial				Far Nai	nily ne	S	CHOERI	KEN			ıffix g. Jr.	
Inven Signa										•				Date				<u> </u>
Resid	lence:	City	Lei	chlingen		State				C	ountry	/ G	ermany	•	Citizens	hip	Gern	nany
Post	Office /	Addre	ss	Neustrasse	12										1			
Post	Office /	Addre	ss										*1		<del></del>			
City	4279	9 Lei	ichlir	ngen	State		Zi	р			Cou	intry	Germai	ny	Applica Author	ant ity		
Nam	ie of	Add	itior	nal Joint In	ventoi	, if any	<b>/</b> :					A p	etition ha	as been fi	iled for th	is ur	nsigned	 
Giver Name		Lo	thaı	•		Middle Initial				Fan Nar		KI	NTRUP				iffix g. Jr.	
inven Signa													•	Date				
Resid	ence:	City	Due	esseldorf		State				Co	untry	G	ermany		Citizens	hip	Germ	any
Post	Office A	\ddre	ss	An der Gara	ather Mo	tte 15				,								
Post (	Office A	Addre	ss															
City	4059	5 Du	esse	ldorf	State		Zi	P			Cou	ntry	German	ıy	Applica Authori	int ty	_	
Nam	e of	Addi	itior	nal Joint In	ventor	, if any	:					A p	etition ha	is been fi	led for thi	s un	signed	
Given Name		Bu	rkha	ard		Middle Initial				Fan Nan	ily ne	ES	CHEN			Sur e.g	ffix . Jr.	
Invent Signa														Date				
Resid	ence: (	City	Due	esseldorf		State				Со	untry	G	ermany		Citizensi	nip	Germ	any
Post (	Office A	ddre	ss	Doeberitzer	Strasse	18												
Post (	Office A	ddres	ss															
City	4059	9 Due	esse	ldorf	State		Zip	,			Cour	ntry	German	у	Applica Authorit	nt y		
Nam	e of A	Addi	tion	al Joint In	ventor	, if any						A poinve	etition ha ntor	s been fil	ed for thi	s un	signed	
Given Name		Am	erig	jo		Middle Initial		_		Fam Nam		PA	STURA			Suf e.g.		
Invent Signa														Date				
Resid	ence: C	ity	Witt	ten		State	$oldsymbol{\mathbb{I}}$			Co	untry	Ge	rmany		Citizensh	ip	Germa	any
Post C	Office A	ddres	ss	Sauerbruch	strasse :	За												
Post C	Office A	ddres	s											*	-			
City	5845	3 Witt	ten		State		Zip				Coun	itry	Germany	,	Applicar Authorit	nt y		
х	Addit	ional i	inven	tors are being	named	on supple	emer	ital s	heet(	(s) att	ache	d here	eto				· ·	

ADDITIONAL INVENTOR(S) DECLARATION Supplemental Sheet Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Middle Family Name **DOLHAINE** Suffix Given Name Hans e.g. Jr. Date Inventor's Signature Residence: City Glehn State Country Germany Citizenship Germany Post Office Address Bendgasse 20 Post Office Address 41352 Glehn Zip Country Germany Applicant Authority Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given Name Middle Suffix Family Name e.g. Jr. Inventor's Date Signature Citizenship Residence: City State Country Post Office Address Post Office Address State City Zip Applicant Authority Country 13 Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Middle Initial Suffix e.g. Jr. Given Name Family Name Date Inventor's Signature Residence: City State Country Citizenship Post Office Address Post Office Address City State Zip Country Applicant Authority Name of Additional Joint Inventor, if any: A petition has been filed for this unsigned inventor Given Name Middle Family Suffix e.g. Jr. Inventor's Date Signature Residence: City State Country Citizenship Post Office Address Post Office Address City State Zip Applicant Authority Country Additional inventors are being named on supplemental sheet(s) attached hereto

Page

Express Mail" mailing label number			Ap	proved for use t	nrough: 10/31/9	PTO/SB/01 (6-9: 88 OMB 0651-003
Type a plus sign (+) inside this box →		Patent and	Trademark	Office; U.S. DE	PARTMENT O	F COMMERCE
0010/PTO U.S. Department of Rev. 6/95 Patent and Trader	mark Office	ttorney Doc	ket	H 4086 PC	7/US	
DECLARATION FOR	Fi	irst Named ventor		KROPF, CI	rristian	
UTILITY OR DESIGN	J		COM	PLETE IF KN	OWN	
PATENT APPLICATION	N A	pplication N	lumber	- 1		
. /		iling Date			<del>-</del>	
Declaration OR X Declara	tion G	Group Art Ur	nit			
Submitted Submit with Initial Filing Initial F		xaminer Na	me			
I believe I am the original, first and sole inventor (if only of the subject matter which is claimed and for which a part of the subject matter which is claimed and for which a part of the subject matter which is claimed and for which a part of the subject matter which is claimed and for which a part of the subject matter which is claimed and for which is claimed and subject to the subject matter which is claimed and subject to the subject matter which is claimed and subject to the subject matter which is claimed and for which is claimed and the c	atent is sought on th	LCIUM CO	ed:			sted below)
the specification of which is attached hereto  OR X was filed on (MM/DD/YYYY) 6/23/2000	(Title of the Ir		as United St	ates Application No	umber or PCT Into	emational
Application Number PCT/EP00/05813	and was amende	ed on (MM/DD/Y	vv) [		(if app	olicable).
I hereby state that I have reviewed and understand the coamendment specifically referred to above.	ntents of the above	identified specif	cation, inclu	ding the claims, as	amended by any	,
I acknowledge the duty to disclose information which is m	•	-				
I hereby claim foreign priority benefits under Title 35, Unit certificate, or 3365(a) of any PCT International application and have also identified below, by checking the box, any having a filing date before that of the application on which	ed States Code ∍11 which designated a foreign application for priority is claimed.	l9(a)-(d) or ∍365( at least one coun for patent or inver	b) of any for try other tha ntor's certific	eign application(s) n the United State: ate, or of any PCT	for patent or inve s of America, liste International app	ntor's d below lication
Prior Foreign Application Country Number(s)		Foreign Filing I (MM/DD/YYY	Date	Priority Not Claimed	Certified Copy YES	
199 30 335.5 Germany	7,	/2/1999				X
Additional foreign application numbers are listed on	a supplemental prio	ority sheet attach	ed hereto:			
I hereby claim the benefit under Title 35, United States C		United States pro				
Application Number(s) Filing Date (f	MM/DD/YYYY)		ap ard su	ditional provisional plication numbers e listed on a pplemental priority eet attached hereto		

Type a plus sig	gn (+) inside this box	, $\Box$								Н	4086 PC	T/US
Type a place of	DECLAR		N					-	Page	**		
I hereby claim the designating the L United States or disclose informat date of the prior	e benefit under Title 35 Jnited Sates of America PCT international applition which is material to application and the nati	, United State a, listed below cation in the patentability onal or PCT	es Code ∍120 v and, insofar manner provid as defined in international f	of any Ur as the su ded by the Title 37, iling date	nited States a bject matter e first paragra Code of Fede of this applic	appliof e aph eral atio	ication(seach of to of Title Regulation.	s), or ∋36 ne claims 35, Unite tions ∋1.5	5© of any PC of this applied States Coo 56 which bec	CT internation cation is no de ∍112.1 ac ame availat	onal application t disclosed in cknowledge to the between the	on the prior ne duty to ne filing
U.S. F	Parent on Number	PC.	T Parent umber		Parent	t Fi		Date	Par	ent Pate	ent Numl <i>licable)</i>	er
			P00/05813	3	6/23/20	000	)			(A)		• ••••
Additional	U.S. or PCT internation	al application	numbers are	listed on	a supplemer	ntal	priority	sheet att	ached hereto	٠		_
As a named inve Trademark Offic	entor, I hereby appoint t e connected therewith:	he following	attorney(s) an	d/or agen	t(s) to prosec	cute	this ap	olication	and to transa	ct all busine	ess in the Pat	ent and
Firm Name OR X List Attorne	ey(s) and/or agent(s) na	ame and regi	stration numb	er below:		J	Custom Numbe		label			
	Name		Registrat Numbe	ion r				Name	· <del></del>		Regist Num	ration ber
Wayne C Glenn E. J. Stephen D.	Murphy		21,062 33,539 33,243		Kimberly Steven	y F C.	R. Hilo Baum	i nan			39,22 33,83	
Additional	attorney(s) and/or agen	it(s) named o	n a suppleme	ntal shee	t attached he	reto	).	· <del>-</del> ·				
Please direct all to:	correspondence	Custome Number	f or labe		004	423	3		OR X	Fill in c	orrespondent s below	æ
Name	Glenn E. J. Mu	ırphy										
Address	Henkel Corpor	ation										
Address	2500 Renaissa	nce Blvd,	Suite 200									
City	Gulph Mills				State	<u> P</u>	A.			Zip	1940	<u> </u>
Country	USA	Teleph	one	610-27	78-4926			Fa	X	610-278	3-6548	~
information a willful false s Title 18 of th	clare that all state and belief are beli statements and th ne United States C nt issued thereon.	eved to be e like so r code and t	a truce and	turthor	that these	2 C1	tateme	ante w <i>e</i>	re mane i	with the k	nowledde	tnat
Name of S	ole or First Inv	entor:						A petitio	n has been fi	led for this t	ınsigned inve	ntor
Given Name	Christian		Middle Initial		Family Name		KRC	PF			Suffix e.g. Jr.	
·Inventor's Signature									Date		-	

Country

Country

Germany

Germany

State

Additional inventors are being named on supplemental sheet(s) attached hereto

Zip

Type a plu	s sign (+)	inside	this b	ox →
------------	------------	--------	--------	------

40597 Duesseldorf

Residence: City Dost Office Address

City

Post Office Address

Duesseldorf

Caecilienstrasse 4

State

H 4086 PCT/US

Germany

Citizenship

Applicant Authority

			DI	ECLAR	ATIC	N	_	_						IONAL IN			š) ——	
	Nam	ie of /	Additior	nal Joint In	vento	r, if any	:	I				A p inve	petition ha entor	as been fil	led for thi	is un	signed	
	Given Name		Marcel	ı		Middle Initial					amily ame	RC	ОТН				ıffix g. Jr.	
	Invent Signat							_						Date				
	Resid	dence: (	City Du	esseldorf		State	7			C	Country	TG	ermany	<del></del>	Citizensi	hip	Germ	nany
	Post (	Office /	Address	Am Nettche	esfeld 2°	1		_		_								
	Post (	Office /	Address					_										
	City	4058	89 Duesse	ldorf	State		Z	Zip		_	Cour	ntry	German	ıy	Applica Authori	int ity		
	Nam	ie of /	Additior	nal Joint In	vento	r, if any	:					A p	oetition ha entor	as been file	ed for thi	is un	signed	
	Given Name		Ulrike			Middle Initial				Fa Na	amily ame	BF	RUENING	GHAUS		Suf e.g.	ıffix g. Jr.	
	Invent Signat			Wilder.	· · · · · · · · · · · · · · · · · · ·		-	_				_	-	Date				
2200 2200 2200	Resid	dence: (	City Mo	onheim		State				C	Country	G	ermany		Citizensh	nip	Germa	any
****	Post C	Office /	Address	An der Dorf:	strasse	6		_								_		
100	Post C	Office A	Address						_	_								
-5	City	4078	89 Monheir	m	State		Z	Zip		_	Coun	ntry	Germany	у	Applica Authorit	nt ty		
	Nam	e of /	Addition	nal Joint In	ventor	r, if any:	:					A pe	etition ha	as been file	ed for thi	s un	signed	
	Given Name		Stefan	I		Middle Initial				Fa Na	amily ame	MU	UELLNEI	R		Suff e.g.		
	Invento Signat	ture					_	_		_		_		Date		_		
	Reside	lence: C	Jity Lan	ngenfeld		State	Ì			C	Country	G€	ermany		Citizensh	ıip	Germa	any
Ì⊢		-	Address	Hagebutten	weg 21		_											
L	Post C	_	Address				-											
-   -	City	4076	64 Langenf	feld	State		Zi	Zip			Coun	itry	Germany	1	Applicar Authority			
	Nam	e of /	Addition	nal Joint Inv	ventor	, if any:	ا :			1		A pe	etition has	s been file	ed for this	s uns	signed	
	Given Name		Albreci	ht		Middle Initial	Ţ	<b>-</b> -		Far Na	mily ime	WE	EISS			Suff e.g.		<del></del>
	Invento Signati						-	_		_				Date				
Ľ	Reside	lence: C	Jity Lan	ngenfeld		State				C	ountry	Ge	ermany		Citizenshi	ip	Germa	any
L	Post C	Office A	Address	Forellenweg	37 ر										-			
L	Post C	Office A	Address				_	_							-			
Ľ	City	4076	4 Langenf	ield	State		Zip	íΡ			Count	try	Germany	,	Applican Authority	ıt y		
	×	Addit	ional inver	ntors are being	named	on supple	∍m∈	enta	ıl sheet	t(s) r	attacher	d here	eto				<del></del>	

	Type	a plus	sign (+)	inside this box	<b>→</b>													
				DECLAR	RATIO	NC									NVENTO		S)	
	Nam	ne of	Additi	onal Joint I	nvento	r, if any	<b>/</b> :					A p	etition h	as been f	iled for th	is ur	nsigned	ı
	Given Name		Ulric	h		Middle Initial				Fan Nar	nily ne	so	CHOER	KEN			ıffix g. Jr.	
	Inven Signa					-								Date				
Ī	Resid	dence:	City L	eichlingen		State	,			Cd	ountry	G	ermany	<u> </u>	Citizens	hip	Germ	any
ľ	Post (	Office /	Address	Neustrass	e 12	-												
ı	Post 0	Office /	Address															
	City	4279	9 Leich	lingen	State		Zi	р			Cou	ntry	Germa	ıy	Applica Authori	ınt ty		
	Nam	ne of	Additi	onal Joint I	nvento	r, if any	<b>/</b> :					A p inve	etition ha	as been fi	led for thi	s ur	nsigned	
	Given Name		Loth	ar		Middle Initial				Fan Nan		KI	NTRUP				ffix J. Jr.	
	Inven Signa	tor's ature									· · · · ·			Date				
200	Resid	lence: (	City	uesseldorf		State				Co	untry	G	ermany		Citizens	nip	Germ	any
M.	Post 0	Office A	Address	An der Ga	rather Mo	otte 15												-
	Post (	Office A	Address															
ia	City	4059	5 Dues:	seldorf	State		Zij	р			Cour	itry	German	y	Applica	nt		
arms		<u> </u>			1	<u> </u>	Щ,	ᆛ							Authorit	У		
4	Nam	ne of A	Additio	onal Joint II	nvento	r, if any	<b>:</b>					A poinve	etition ha ntor	s been fi	led for this	s un	signed	
1000	Given Name		Burk	hard		Middle Initial				Fam Nam	ily ne	ES	CHEN			Suf e.g		
N.	Invent Signa													Date				
ſ	Resid	ence: 0	City D	uesseldorf		State	T			Co	untry	Ge	rmany		Citizensh	ip	Germa	anv
Ī	Post C	Office A	ddress	Doeberitze	r Strasse	e 18				_		-						
ļ	Post C	Office A	ddress															
	City	4059	9 Duess	eldorf	State		Zip	ì			Coun	try	German	у	Applicar Authorit	nt y		
	Nam	e of A	Additio	onal Joint Ir	vento	r, if any	:				i	A pe	etition ha ntor	s been fil	ed for this	un	signed	
	Given Name		Amer	igo		Middle Initial	T			Fam Nam	ily e	PA	STURA			Suf e.g.		
	Invent Signat								•		•			Date				
L	Reside	ence: C	ity W	itten		State				Cou	untry	Ge	rmany		Citizenshi	ip	Germa	iny
	Post C	Office A	ddress	Sauerbruck	nstrasse	3a												
	Post C	Office A	ddress									****						
	City	5845	3 Witten		State		Zip				Count	ry	Germany	1	Applican Authority	t /		
	х	Additi	onal inv	entors are bein	g named	on supple	emer	ital s	sheet(	s) att	ached	here	to				<u></u>	

		Di	ECLARA	ATIC	N					ļ			ONAL IN			;)	
Nam	ne of /	Addition	nal Joint Inv	ventor	i, if any:	:					A p	etition ha entor	ıs been fil	ed for thi	s un	signed	
Given Name	n e	Hans			Middle Initial		-		Fan Nan		DC	OLHAINE	E		Suf e.g.		
Inven Signa					-						<u></u>		Date				<del></del>
Resid	idence: (	City Gle	hn		State	T			C	ountry	G	ermany		Citizensh	qir	Germ	any
Post	Office A	Address	Bendgasse	20					-								
Post	Office A	Address				_	_										
City	4135	52 Glehn		State		Zi	ip			Cour	ntry	German	у	Applica Authorit	nt ty		
Nan	ne of /	Additior	nal Joint Inv	ventor	r, if any:	:					A p	etition ha	ıs been fil	ed for thi	s un	signed	
Giver Name					Middle Initial	I			Fan Nar						Suf e.g.		
	ntor's ature					_							Date				
Resid	idence: (	City			State		_		Cr	ountry				Citizensh	ιip		
Post	Office A	Address				_	_										
Post	Office A	∖ddress				_	_										
City				State		Ziį	р			Cour	ntry			Applica Authorit	nt ty		
Nan	ne of /	Additior	nal Joint In	ventor	r, if any:	:			_		A po	etition ha	s been fil	ed for this	s un:	signed	
Giver Name					Middle Initial				Fan Nan						Suf e.g.		
	ntor's ature								_				Date				
Resid	idence: (	City			State				Cc	ountry	L			Citizensh	ıip		
Post	Office A	Address				_	_										
Post	Office A	∖ddress	L	<del></del>			_										
.City				State	<u> </u>	Zij	р	Ĺ		Cour	ntry			Applicar Authorit	nt y		
Nan	ne of /	Addition	nal Joint Inv	r, if any:	:					A pe	etition has	s been fil	ed for this	s uns	signed		
Giver Name	n ie				Middle Initial		_		Fan Nan	nily ne					Suff e.g.	fix Jr.	
Signa	ntor's ature					_							Date				
Resid	idence: C	Dity			State	丄		<u></u>	Cc	ountry				Citizensh	ip		
	Office A		<u> </u>														
	Office A	Address				<del></del>	_							-1			
City				State		Zip	Р	i	1	Coun	ntry	l		Applicar Authorit	nt y		
City	Addi	tional inve	ntors are being		i on supple			al sheet	 t(s) ε			eto		Applicar Authorit	nt y		

xpress Mail" mailing label numbe Type a plus sign (+) inside this bo		P		•	PTO/SB/01 (6 hrough: 10/31/98 OMB 0651-C EPARTMENT OF COMMERCE
0010/PTO Rev. 6/95	U.S. Department of Commerce Patent and Trademark Office	Attori Num	ney Docket	H 4086 PC	T/US
DECLARAT	ION FOR		Named	KROPF, C	hristian
UTILITY OF			COM	IPLETE IF KN	VOWN
PATENT APP		Appli	cation Number		
IAILIIIAII	LICATION	Filing	Date		
Declaration OF	R X Declaration	Grou	p Art Unit		
Submitted with Initial Filing	Submitted after Initial Filing	Exan	niner Name		
COMPOSITE MATER CONSTITUENTS the specification of which	RIALS COMPRISED OF	CALCI		IDS AND PR	OTEIN
is attached hereto					
OR was filed on (MM/DD/YYYY)	6/23/2000		as United S	tates Application N	lumber or PCT International
Application Number DCT/ED00//		ended on	(MM/DD/YYYY)	* * ***	(if applicable).
PCT/EP00/0	13013		` <u> </u>	uding the plains of	
amendment specifically referred to ab acknowledge the duty to disclose int	pove.				
hereby claim foreign priority benefits certificate, or s365(a) of any PCT Intended and have also identified below, by chaving a filing date before that of the					
Prior Foreign Application Number(s)	Country	For	eign Filing Date //M/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO
199 30 335.5	Germany	7/2/1	999	Not ofairned	X X
Additional foreign application nu	ımbers are listed on a supplemental	I priority s	heet attached hereto:		
I hereby claim the benefit under Title	35, United States Code ∍119(e) of a	any Unite			<del></del>
Application Number(s)	Filing Date (MM/DD/YYYY)		ar ar su	dditional provisiona oplication numbers re listed on a upplemental priority neet attached heret	,

_							
Type :	a i	olus.	sian	(+)	inside	this	hox 🗻

H 4086 PCT/US

### **DECLARATION**

Page 2

I hereby claim the benefit under Title 35, United States Code 3120 of any United States application(s), or 3365© of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior

Applica	. Parent tion Number	N	CT Parer Number				ng Date YYYY)	Pa	arent Paten <i>(if applic</i>	
		PCT/EF	P00/058	13	6/23/2	000				
As a named in	al U.S. or PCT internation enventor, I hereby appoint fice connected therewith	t the following								in the Patent
Firm Nai OR X List Attor	me mey(s) and/or agent(s) n	name and reg	istration nur	nber belov	w:		stomer o	or label		
	Name		Registr Numb	ation ber			Name	<del></del>	<u>.</u>	Registrati Numbe
Wayne C. Glenn E. Stephen D	Jaeschke J. Murphy J. Harper		21,062 33,539 33,243	9	Kimberi Steven	y R. F C. Ba	lild uman			39,224 33,832
Additiona	l attorney(s) and/or ager	nt(s) named o	n a supplen	nental she	et attached he	reto.	***			h <del> </del>
Please direct a to:		X Customer Number	r or lab	pel	004	423		OR 5	X Fill in corres	spondence low
Name	<del></del>									
Address	<del>-  </del>									
Address		ince Blvd,	Suite 200							
City		T-tomb			State	PA			Zip	19406
<u></u>	me Glenn E. J. Murphy dress Henkel Corporation dress 2500 Renaissance Bly Gulph Mills untry USA Tele ereby declare that all statements a formation and belief are believed to ful false statements and the like si e 18 of the United States Code an	Telepho ements mad ieved to be	de herein	of my o	78-4926 own knowle r that these	dge a	re true an	nd that all	610-278-65 statements n with the know n, under Secti	nade on
Title 18 of the	he United States C nt issued thereon.	ode and th	nade are nat such	punisha willful fa	ble by fine lse statem	or impents in	nay jeopa	rdize the	validity of the	n application
Title 18 of to or any pate	he United States C nt issued thereon.	Code and th	nade are hat such	punisha willful fa	ible by fine ilse statem	ents n	<del></del>		validity of the	
Title 18 of to or any pate  Name of S  Given Name	THE IDOGGGG WICE COIT.	entor:	nade are p hat such v Middle Initial	punisha willful fa	Family Name	ents m	<del></del>		led for this unsign	ned inventor
Title 18 of to or any pate  Name of S  Given	Sole or First Inve	entor:	hat such	punisha willful fa	alse stateme	ents m	A petition		led for this unsign	ned inventor
Title 18 of tor any pate  Name of S  Given Name  Inventor's	Sole or First Inve	entor:	hat such	punisha willful fa	alse stateme	KR	A petition	n has been fil	led for this unsign	ned inventor
Title 18 of to or any pate.  Name of S  Given Name  Inventor's Signature	Christian  Guesseldorf	entor:	Middle Initial	punishe willful fe	Family Name	KR	A petition	n has been fil	led for this unsign	ned inventor
Title 18 of tor any pate  Name of S  Given Name  Inventor's Signature  Residence: C	Sole or First Invention  Christian  Sity Duesseldorf  ddress Caecilien	entor:	Middle Initial	punisha willful fa	Family Name	KR	A petition	n has been fil	led for this unsign	ned inventor

Type a plus sign (+) inside this box →

			Di	ECLAR	ATIC	NC								IONAL IN pplement			3)	
	Nam	ie of	Additior	nal Joint In	vento	r, if any	:			!		A p	oetition ha entor	as been file	ed for thi	is ur	ısigned	
	Given Name		Marcel			Middle Initial				Fan Nar	mily me	RC	отн				uffix g. Jr.	
	Invento Signat									_		_		Date		_		
į	Resid	dence: (	City Du	esseldorf		State				С	ountry	G	ermany		Citizensi	hip	Germ	any
	Post (	Office /	Address	Am Nettche	sfeld 2	.1		_								_		
	Post C	Office /	Address				_											
	City	4058	89 Duessel	ldorf	State		Z	Zip			Cour	ntry	German	ıy	Applica Authori	int ity		
	Nam	e of	Additior	nal Joint In	vento	r, if any	:					A p	petition ha	as been file	ed for thi	is un	ısigned	
	Given Name		Ulrike			Middle Initial	7			Fan Nar	mily me	BF	RUENING	GHAUS			ıffix g. Jr.	
	Invent Signat									_				Date				
	Resid	dence: (	City Mo	onheim		State	J			C	ountry	G	ermany		Citizensh	nip	Germa	any
	Post (	Office /	Address	An der Dorfs	strasse	e 6	_											
-	Post (	Office /	Address				_											
J	City	4078	89 Monheir	ím	State	T	Z	Zip			Coun	ntry	Germany	·v	Applica			
ũ								-				لــــــــــــــــــــــــــــــــــــــ			Authorit			
	Nam	e of	Addition	nal Joint In	ventor	r, if any:	:					A pe	etition ha	as been file	ed for this	s un	signed	
	Given Name		Stefan	1		Middle Initial				Fan Nan		ML	UELLNEI	R		Suf e.g.	ıffix g. Jr.	
	Invento Signat						_			_		_		Date				
	Reside	dence: C	City Lar	ngenfeld		State				Cr	ountry	Ge	ermany		Citizensh	nip	Germa	any
1	Post C	Office /	Address	Hagebutten	weg 21													
1	Post C	Office /	Address				_											
	City	4076	64 Langenf	feld	State		Zi	Zip			Coun	itry	Germany	,	Applicar Authorit			
	Nam	e of /	Addition	nal Joint Inv	ventor	r, if any:	: !					A pe	etition has	s been file	ed for this	s un	signed	
	Given Name	,	Albreci	ht		Middle Initial	T	1 		Fam Nam		WE	EISS			Suff e.g.		
	Invento Signat						_							Date				
1	Reside	lence: C	City Lan	ngenfeld		State	J	_		Cc	ountry	Ge	ermany		Citizenshi	ıip	Germa	any
Į	Post C	Office /	Address	Forellenweg	g 37			_				т.		· · · · · · · · · · · · · · · · · · ·		<u>·</u>		
	Post C	Office /	Address	<u> </u>			_	_			-							
	City	4076	64 Langenf	feld	State		Zij	ip			Count	itry	Germany	, 1	Applican Authority	nt V		
Ī	×	Addi	tional inve	ntors are being	g named	d on supple	əme	enta	al shee	t(s) a	.ttacher	d her	eto		<del></del>			

	Type	a plus :	sign (+) ir	side this box a		L												
L			D	ECLAR	ATIC	ON								ONAL II oplemen		•	3)	
	Nam	e of	Additio	nal Joint In	vento	r, if any	<b>/:</b>					A p	etition ha	as been fi	led for thi	is ur	signed	l
	Given Name		Ulrich			Middle Initial				Fa Na	mily me	so	CHOER	KEN			ffix Jr.	
	Invent Signa													Date				
	Resid	ence: (	City Le	ichlingen		State				C	ountry	G	ermany		Citizens	hìp	Germ	any
	Post 0	Office A	ddress	Neustrasse	12													
ſ	Post 0	Office A	Address			<del></del>												
	City	4279	9 Leichli	ngen	State		Ī	Zip			Cou	ntry	German	ny	Applica Authori			
	Nam	e of	Additio	nal Joint In	vento	r, if any	<b>/:</b>					A p	etition ha	ıs been fil	led for thi	s un	signed	
	Given Name		Lotha	r		Middle Initial				Fa Na	mily me	KI	NTRUP			Su e.g	ffix . Jr.	
	inveni Signa													Date				
in in	Resid	ence: (	City Du	esseldorf		State				С	ountry	G	ermany		Citizensi	nip	Germ	any
24.1	Post 0	Office A	Address	An der Gara	ther Mo	otte 15												
mer gran	Post 0	Office A	Address															
- The The Late	City	4059	5 Duesse	eldorf	State		Z	Zip			Cou	ntry	German	У	Applica Authori	nt		
Con South	Nam	e of	Additio	nal Joint In	vento	r, if any	:	T				A p inve	etition ha ntor	s been fil	<u> </u>		signed	
#F	Given Name		Burkh	ard		Middle Initial				Far Na		ES	CHEN			Suf e.g.		
	Invent Signa													Date				
L	Resid	ence: (	City Du	esseidorf		State				C	ountry	Ge	ermany		Citizensh	ip	Germa	any
L	Post C	Office A	ddress	Doeberitzer	Strass	e 18											_	
ŀ			ddress	i		<b></b>	_								· · · · · · · ·			
l	City	4059	9 Duesse	eldorf	State		Z	<u>Z</u> ip			Cou	ntry	German	y	Applica Authorit	nt y		
ſ	Nam	e of A	Additio	nal Joint In	vento	r, if any	:	T				A po	etition ha ntor	s been file	ed for this	s uns	signed	
	Given Name		Ameri	go		Middle Initial				Fan Nar	nily ne	PA	STURA			Suf e.g.		
	Invent Signat	or's ture												Date				
	Reside	ence: C	City Wi	tten		State				Co	untry	Ge	rmany		Citizensh	ip	Germa	any
	Post C	Office A	ddress	Sauerbruch	strasse	3a												
	Post C	Office A	ddress															
	City	5845	3 Witten		State		Z	ip			Cour	itry	Germany	′	Applicar Authority	ıt /		
	x	Addit	ional inve	ntors are being	named	on supple	eme	ental	shee	t(s) a	ttache	d here	eto					

		Di	ECLARA	ATIO	N							ONAL IN			5)	
Nam	e of	Additio	nal Joint In	ventor	, if any:					A poinve	etition ha ntor	s been fil	ed for thi	s un:	signed	
Given Name		Hans			Middle Initial	T		Fan Nan	nily ne	DC	LHAINE			Suf e.g.		
Inven Signa												Date				
Resid	lence:	City Gi	ehn	_	State			Co	ountry	G	ermany		Citizensl	hip	Germ	any
Post	Office /	Address	Bendgasse	20												
Post	Office /	Address														
City	4135	52 Glehn		State		Zip			Cour	ntry	German	у	Applica Authori	int ty		
Nan	ne of	Additio	nal Joint In	ventor	, if any	:	·			A p inve	etition ha	s been fil	ed for thi	is un	signed	
Giver Name					Middle Initial			Fan Nar	nily ne					Suf e.g	ffix . Jr.	
Inven Signa												Date				
Resid	dence:	City			State			Co	ountry				Citizens	hip		
Post	Office	Address														
Post	Office	Address		<u> </u>	T						···					
City				State		Zip			Cou	ntry			Applica Authori	int ity		
Nan	ne of	Additio	nal Joint In	ventoi	r, if any	: ]				A p inve	etition ha	s been fil	ed for thi	is un	signed	
Give Nam					Middle Initial			Fan Nar	nily me					Suf e.g	ffix . Jr.	
Inver Signa	ntor's ature											Date				
Resid	dence:	City			State			C	ountry				Citizens	hip	<u></u>	
Post	Office	Address														
Post	Office	Address		<del></del>	1				T		1		T			
City				State		Zip			Cou	ntry			Applica Authori	int ity		
Nan	ne of	Additio	nal Joint In	vento	r, if any	:				A p	etition ha	ıs been fil	ed for thi	is un	signed	
Give Nam	n e				Middle Initial			Far Nai	nily me					Sul e.g	ffix . Jr.	
	ntor's ature											Date				
Resi	dence:	City			State			C	ountry				Citizens	hip		
Post	Office	Address														
Post	Office	Address		·					·							
City		···		State	<u> </u>	Zip			Cou	ntry			Applica Authori	int ity		
L	Add	itional inv	entors are bein	g named	on suppl	emer	ntal shee	et(s) a	attache	d he	reto				_	

rpress Mail" mailing label number		PTO/SB/01 (6- oproved for use through: 10/31/98 OMB 0651-0
ype a plus sign (+) inside this box →	Patent and Trademar	k Office; U.S. DEPARTMENT OF COMMERCE
010/PTO U.S. Department of Commerce lev. 6/95 Patent and Trademark Office	Attorney Docket Number	H 4086 PCT/US
DECLARATION FOR	First Named Inventor	KROPF, Christian
UTILITY OR DESIGN	СОМ	IPLETE IF KNOWN
PATENT APPLICATION	Application Number	
I AI LIOATION	Filing Date	
Declaration OR X Declaration	Group Art Unit	
Submitted Submitted after with Initial Filing	Examiner Name	
As a below named inventor, I hereby declare that:  My residence, post office address, and citizenship are as stated below I believe I am the original, first and sole inventor (if only one name is lis of the subject matter which is claimed and for which a patent is sought COMPOSITE MATERIALS COMPRISED OF CONSTITUENTS	sted below) or an original, first and on the invention entitled:	
	the Invention)	
he specification of which is attached hereto  OR	ac United S	itates Application Number or PCT International
x was filed on (MM/DD/YYYY) 6/23/2000	as Officed S	nates Application Number of Tot memorial
Application Number PCT/EP00/05813 and was an	mended on (MM/DD/YYYY)	(if applicable).
hereby state that I have reviewed and understand the contents of the amendment specifically referred to above.  acknowledge the duty to disclose information which is material to pate		
hereby claim foreign priority benefits under Title 35, United States Coc pertificate, or ±365(a) of any PCT International application which design and have also identified below, by checking the box, any foreign applica- paving a filing date before that of the application on which priority is clai	de э119(a)-(d) or э365(b) of any fo ated at least one country other th ation for patent or inventor's certifi med.	oreign application(s) for patent or inventor's an the United States of America, listed below icate, or of any PCT International application
Prior Foreign Application Country Number(s)	Foreign Filing Date (MM/DD/YYYY)	Priority Certified Copy Attached?  Not Claimed YES NO
199 30 335.5 Germany	7/2/1999	
Additional foreign application numbers are listed on a supplement	al priority sheet attached hereto:	
hereby claim the benefit under Title 35, United States Code >119(e) of		
Application Number(s) Filing Date (MM/DD/YYYY)	<i>;</i>	Additional provisional application numbers

Туре	а	plus	sign	(+)	inside	this	box	<b>→</b>
						_		

L	1 4	n۶	28	PC	T/I	IS
1	1 4	UC	)(J	-	17.	-

				DE	CL	4R/	ATIO	N								Pa	ge	2			
I herel design United disclos date o	oy cla lating Stat se inf	aim the tes or forma	ne ber United PCT ation w	nefit u d Sate interr vhich cation	nder Title es of Ame national a is materi and the	e 35, U erica, li applicat al to pa nationa	nited Stat sted below tion in the atentability al or PCT	es Code ∍1 w and, inso manner pr v as defined internation	20 far ovio	of any as the led by Title 3 ling da	Unite subje the fi 7, Co ate of	ed State ect matte rst para de of Fe this app	s app er of graph edera olicati	olication each of n of Till I Region.	on(s), or ∋30 of the claim tle 35, Unit ulations ∋1.	65© of any ns of this a ed States 56 which	y PC pplic Code beca	T internati ation is no e ∍112.1 a me availa	onal ot disa ckno ble b	applicatio closed in wledge th etween th	n the prior e duty to e filing
	U	.s.	Par	ent			PC	T Parer				Pare	nt F	ilin	g Date			nt Pat	ent	Numb	
Ap	plic	cati	on M	Num	ber	+		umber 200/058	13		+	(IVII) 6/23/2			YYY)	-		(if app	IICE	ibie)	
						ľ	- O I / L I	00/030	10			012012	200							uris .	
	Addit	tional	U.S.	or PC	T interna	itional a	applicatio	n numbers	are	listed	on a	supplem	nenta	l prior	ity sheet at	tached he	reto.				
As a r Trade	ame mark	d inv	entor, ce cor	l here	eby appo	int the	following	attorney(s)	and	l/or ag	ent(s	) to pros	ecute	e this	application	and to tra	nsac	t all busin	ess iı	n the Pate	nt and
	Firm OI	Nam R	е										-	Cust Num	omer o	r label					
×	List /	Attern	iey(s)	and/c	r agent(s	s) name	e and regi	stration nu:	nbe	r belo	. <b>∀</b>										
			1	Vame	)			Regist Num							Name	•				Registr Num	
Way Glei Stei	nn E	E. J	. Mu	irphy	/			21,06 33,53 33,24	9			(imbe Stever								39,22 33,83	
	Addit	tional	attorr	ney(s)	and/or a	gent(s)	named o	n a supplei	mer	ntal she	eet at	tached I	heret	0.							
Pleas to:	e dire	ect al	il corre	espon	dence	x	Custome Number	r orla	bel			0	042	3		OR	х	Fill in o	orres s bel	spondence ow	•
Nam	ie		G	enr	n E. J.	Murp	hy														
Add					el Corp																
Add	ress	3				ssanc	e Blvd,	Suite 20	00		Ct-	1-	T :	2.4			_	7:4	_	40406	
City Cou	ntny	,		JSA	n Mills		Teleph	one	Т.	610-	Sta -278	4926	1.	PA	Fa	ay .	_	Zip 610-278	3-65	19406 48	
I he infor willfu Title	reb mat ul fa 18	y de tion ilse of th	clare and state	e tha belie emer nited	ite and	the i	ents ma	de herei e true; ar	n c	of my furthe	owr er th	know at the	ne oi	' imn	re true a ments we prisonme nay jeopa	nd that a	all s le w	tatemer	nts r	nade or viedge t	1 of
Nar	ne (	of S	ole	or I	First I	nven	tor:								A petitio	n has bee	n file	d for this u	ınsig	ned inven	tor
Give Nam	n e		Ch	risti	an			Middle Initial				Famil Name	ly e	KF	ROPF					ffix Jr.	
·Inve																Date					
Resi	dend	ce: C	ity	Due	sseldo	rf		State				Cou	ntry	G	ermany			Citizens	nip	Germ	any
Post	Offi	ce A	ddre	ss	Caeci	lienst	rasse 4														
Post	Offi	ce A	ddre	ss																	
City	4	059	7 Due	esse	dorf		State		z	ip			Cou	ntry	Germa	ny		Applica Authori	nt ty		
7	7	Additi	ional	inver	ntors are	e bein	g named	on suppl	em	ental	shee	t(s) att	ache	d her	reto						

Type a	plus	sign	(+)	inside	this	box →
--------	------	------	-----	--------	------	-------

DECLARATION										ADDITIONAL INVENTOR(S) Supplemental Sheet								
Nam	ie of /	Additio	nal Joint In	ventor	, if any	/ <b>:</b>			!		İ							
Given Name		Marce	,		Middle Initial				Fan Nar	mily ime	R	отн				ıffix g. Jr.		
Invent Signa							_				_		Date		_		<b></b>	
Resid	dence: (	City Du	uesseldorf	<del></del>	State	, 🗆			T <sub>C</sub>	ountry	/ G	Germany	<del></del>	Citizensh	hip	Germ	any	
Post (	Office /	Address	Am Nettche	sfeld 21			_											
Post (	Office /	Address				_	_		_	_	_							
City	4058	89 Duesse	eldorf	State		Z	Zip			Cou	ntry	German	y	Applica Authorit	int ity			
Nam	ie of /	Additio	nal Joint In	ventor	, if any	/:	Ī				A p inv€	petition ha entor	ıs been file	ed for thi	is un	signed		
Given Name		Ulrike			Middle Initial	٦			Fan Nan	mily ime	ВГ	RUENING	GHAUS			ıffix g. Jr.		
Invent Signa						_	_		_				Date					
Resid	dence: (	City Mc	onheim		State				Cr	ountry	G	Germany		Citizensh	nip	Germa	any	
Post (	Office /	Address	An der Dorfs	strasse	6		_		_							_		
Post (	Office F	Address				_			_									
City	4078	89 Monhei	im	State		Z	Zip			Cour	ntry	Germany	у	Applica Authorit	nt ty			
Nam	e of	Additio	nal Joint In	ventor	, if any	': 					A p	petition has entor	s been file	ed for this	s un	signed		
Given Name		Stefan	·		Middle Initial				Fan Nan	nily me	М	UELLNE	R		Suf e.g.	ffix <sub>J</sub> . Jr.		
Invent Signat	ature						_		_				Date					
<u> </u>	dence: C		ngenfeld		State	لـــ	Ĺ		Co	ountry	G	ermany		Citizensh	ıip İ	Germa	any	
		Address	Hagebutten	weg 21														
	7	Address	<u> </u>	T	т	Ţ		<del></del>		<del></del>				<del>-</del>	<b>—</b>			
City	40/0	64 Langen	feld	State		Zı	Zip			Cour	ntry	Germany	<i>y</i>	Applicar Authorit				
Nam	e of	Additio	nal Joint Inv	ventor	, if any	:					A p	petition has entor	s been file	ed for this	s un	signed		
Given Name		Albrec	ht		Middle Initial	J			Fam Nam	nily me	WI	EISS			Suff e.g.			
Invent Signat							_				_		Date		_			
Resid	dence: C	City Lar	ngenfeld		State				Со	ountry	Gr	ermany		Citizensh	ıip	Germa	any	
Post C	Office A	Address	Forellenweg	g 37		_	_				_				_			
Post C	Office A	Address				_									_			
City	4076	64 Langen	feld	State		Zi	Zip			Coun	ntry	Germany	<i>,</i>	Applican Authority	nt y			
х												reto						

Type a	a plus :	sign (+	·) ins	side this box →	لــــــــــــــــــــــــــــــــــــــ														
		!	DF	ECLARA	ATIC	N					ADDITIONAL INVENTOR(S) Supplemental Sheet								
Name of Additional Joint Inventor, if any:										A petition has been filed for this unsigned inventor									
Given Name		Ulri	ch			Middle Initial			Far Na	mily ame	S	CHOERK	ŒN		Sut e.g	ffix . Jr.			
Invent Signat											_		Date		_				
Resid	lence: (	City	Lei	chlingen		State			С	Country	C	Germany		Citizensl	nip	Germ	any		
Post (	Office A	\ddres	is	Neustrasse	12		_		_		_								
Post (	Office A	Addres	iS				_												
City	4279	99 Leic	:hlin	gen	State		Z	<u>Zip</u>		Cour	ntry	German	у	Applica Authori	int ty				
Nam	e of	Addit	tion	nal Joint Inv	ventor	, if any	:		_		A r	petition ha entor	s been fil	ed for thi	s un	signed			
Given Name		Loti	har	,		Middle Initial				mily ame	KI	INTRUP			Suf e.g	ffix . Jr.			
Invent Signa											_		Date		-				
Resid	lence: (	City	Du€	esseldorf		State			C	ountry	Germany Citizenship Germ						any		
Post C	Office A	Addres	is	An der Gara	ther Mo	tte 15	_		_										
Post C	Office A	Addres	is				_												
City	4059	95 Due:	ssel	dorf	State		Zi	ip.		Coun	ıtry	Germany	у	Applica Authorit	nt ty				
Nam	e of	Addit	tion	nal Joint Inv	ventor	, if any	:				A r inve	petition has entor	s been file	ed for this	s un:	signed			
Given Name		Bur	kha	ard		Middle Initial			Fan Nar	mily me	ES	SCHEN			Suf e.g.				
Invent Signal							_		_		_		Date						
Resid	lence: C	City	Due	esseldorf		State			Cr	ountry	G	Sermany		Citizensh	ıip	Germa	any		
Post C	Office A	ddres	s	Doeberitzer	Strasse	18					_								
	Office A	\ddres	s	<u> </u>		<del></del>	_			·									
City	4059	99 Due:	ssel	dorf	State	<u> </u>	Ziį	р		Coun	ountry <b>Germany</b>			Applicant Authority					
Nam	e of /	Addit	ion	nal Joint Inv	ventor	, if any:	:				A p	petition has entor	s been file	ed for this	s uns	signed			
Given Name		Ame	eriç	jo		Middle Initial			Fan Nan	nily me	PASTURA			Suffix e.g. Jr.					
Invent Signat													Date						
Resid	lence: C	Jity_	Witt	ten		State	1		Cc	ountry	G	ermany		Citizensh	ip	Germa	any		
Post C	Office A	ddres	s	Sauerbruchs	strasse	3a	_				_								
Post C	Office A	ddres	s				_		_										
City	5845	53 Witte	en		State		Zip	р		Coun	try	Germany	1	Applicar Authority	nt y				
×																			

Type a	plus s	ign (-	F) ins	ide this box →					_									
DECLARATION  ADDITIONAL INVENTOR(S) Supplemental Sheet																		
Name of Additional Joint Inventor, if any:  A petition has been filed for this unsigned inventor																		
Given Name		Pet	er			Middle Initial			Fan Nar	nily ne	w	WUELKNITZ Suffix e.g. Jr.						
Invento Signatu		Date																
Resider	nce: C	ity	Lei	chlingen		State			Co	ountry	G	ermany		Citizensh	ip	Germany		
Post Office Address   Im Erlengrund 9																		
Post Office Address																		
City	4279	9 Lei	chlin	gen	State		Ziį	р		Cou	ntry	German	у	Applica Authorit				
Name of Additional Joint Inventor, if any:  A petition has been filed for this unsigned inventor																		
Given Name		Ru	ediç	ger		Middle Initial			Fan Nar	nily ne	K	NIEP			Suf e.g	ffix . Jr.		
Invento Signatu													Date					
Reside	nce: C	City	Lar	ngenfeld		State			C	ountry	Germany Citizenship Gern						any	
Post Of	ffice A	ddre	ss	Wupperstra	sse 26a	·												
Post Of	ffice A	ddre	ss															
City	4076	4 Lar	ngen <sup>.</sup>	feld	State		Zi	Р		Cou	ntry	ntry Germany Applicant Authority						
Name	of A	Addi	tior	nal Joint In	ventor	, if any	:				A p	etition ha entor	s been fil	ed for this	s un	signed		
Given Name		Ha	ns			Middle Initial			Fan Nar	nily ne	LA	SKA		Suf e.g	ffix . Jr.			
Invento Signatu													Date					
Reside	nce: (	City	Lar	ngenfeld		State			Co	ountry	G	ermany		Citizensh	ip	Germa	any	
Post Of	ffice A	ddre	ss	Sperberstra	sse 10													
Post Of	ffice A	ddre	ss															
City	4062	7 Lar	ngen	feld	State		Ziį	р		Country Germany				Applicant Authority				
Name	of /	Addi	itior	nal Joint In	ventor	, if any	:				A p	etition ha entor	s been fil	ed for this	s un	signed		
Given Michael Middle Initial					Fan Nar	nily ne	М	EINDER	3		Suf e.g	fix . Jr.						
	Inventor's Signature Date																	
Residence: City Krefeld State Country Germany Citizenship Germany									any									
Post Office Address Am Eichenhof 11																		
Post Office Address																		
City	4780	0 Kre	efeld		State		Zi	Р		Cou	ntry	German	у	Applica Authorit	nt y			
х	X Additional inventors are being named on supplemental sheet(s) attached hereto																	

sign (+) inside this box +

# United States Patent & Trademark Office

Office of Initial Patent Examination -- Scanning Division



Application deficiencies found during scanning:

□ Page(s)	of		were not present
for scanning.		(Document title)	
□ Page(s)	of		were not present
for scanning.		(Document title)	

Scanned copy is best available. FIG. 15 DARK

pages 3, 4,5 of Decbaration Missing